



EXCLUSIVE CONTRIBUTIONS

A Study of Alveolar Pyorrhœa: Its Associated Lesions and Its Analogies, with a Plea for Radical Treatment.

By CARL THEODOR GRAMM, M.D., Chicago.

Professor of Oral Surgery and Pathology in College of Physicians and Surgeons, Keokuk;
Lecturer on Stomatology, St. Joseph's Hospital Training School for Nurses;
Attending Stomatologist at St. Joseph's Hospital and
United Hebrews Charities' Dispensaries.

PART II.

Pyogenic organisms having invaded the tissues of the dental alveolus, their effectiveness (Wyssokowitsch, Buchner, Nissen) would seem to depend upon the numbers of the invading host, but more certainly upon the chemical condition of the circulating plasma.

In this connection the stomatitis and alveolar pyorrhœa in diabetes presents points of striking interest.

Diabetes is a nutritive disorder in which sugar accumulates in the blood, owing, according to Pavy, to a debilitated functional activity of intestines and liver. Its symptoms are manifold, involving the nervous and circulatory system. Among them are frequently found connective tissue inflammations, thrombosis of arterioles and consequent gangrene, hemorrhagic retinitis, cataract formations and the above mentioned stomatitis and pyorrhœa. The infective processes of the disease are aided here because these tissues with lowered power of resistance are laden with glycose. Researches in Pasteur's laboratory have developed the fact that toxines created in the presence of glycose are more poisonous than those developed in the presence of less or no glycose. Moreover, owing to the existing nutritive disorder, albumens and lime salts are readily deposited, interstitially and upon the peridental membrane, this increasing irritation extending further invitation to pyogenic organisms.

The alveolar pyorrhœa of pregnancy claims a similar etiology.

**Alveolar
Pyorrhœa
of Pregnancy.**

"All tissues of the mother's organism are in a condition of chemical loosening favoring contribution to the developing fœtus." (Hallervorden—Der Zusammenhang Chemischer und Nervöser Vorgänge.)

"The mother's organism itself grows." The bones betray their sympathy through osteophytes and again through the osteomalacia of gravidity.

Frequency of albuminous urine bears witness to the altered circulation of material. The many various toxic neuroses are evidences of the production of organic acids and of leucomaines. With all this, the liver is burdened with increased function which has relation with its atrophic tendency to eclampsia. Eclampsia itself is the result of an auto-intoxication (Massin, *Centralblatt für Gynecologie*, Oct., 1895), due (1) to the lessened oxydization of nitrogenous bodies; (2) formation of organic acids and leucomaines; (3) to NH_3 accumulation (Nencki and Hahn); Carbamic acid (Chrobak); (4) Nervous affections.

Given these conditions, common in pregnant women, it may be conceived that the tissues of the mouth, the alveolar tissues, are an easy prey to infection, to inflammation, to the development of necrotic tendencies.

That in the course of generation intermediate metabolic products are created which according to the individual "neuro-chemic organization" (Hallervorden) may in themselves work harm, is a generally acknowledged fact, the elucidation of which is to be accredited to Mobius. Not only do these products dominate the character of the human organism as a culture medium for bacteria, but they may directly favor coagulation of albumens interstitially and the deposit of lime salts which normally are held in solution in the plasma, because a lessened oxydization means also a lessened production of carbon dioxide, which is necessary to hold its concomitant lime phosphates in solution in the plasma.

I have thus briefly dwelt upon these two types of nutritive disturbances in diabetes and in pregnancy because I believe I have found exhibited in them all the simple and complex causes of alveolar pyorrhœa.

**Pyorrhœa
Analogous to
Osteomyelitis.**

A previous reference was made in this thesis to the analogy frequently existing between alveolar pyorrhœa and the osteomyelitic process.

In venturing this opinion I have the support of no less an authority than the eminent pathologist, Prof. Senn.

Until recently it has been held that osteomyelitis was caused by an infection from the staphylococcus pyogenes, principally by the aureus and the albus varieties.

Lannelongue, Achard and Chipault have reported cases of acute osteomyelitis, however, which developed pure cultures of Frankel's diplococcus of pneumonia.

Fischer and Levy (Befunde bei osteomyelitis und periostitis—*Deutsche Zeitschrift für Chirurgie*, Leipzig, Vol. XXXVI.) out of fifteen cases examined, produced two pure cultures of *streptococcus pyogenes*.

Kraske (Zur etiologie und pathogenesis der acuten osteomyelitis—*Archiv. für Clin. Chir.*, Vol. XXXIV., folio 701), basing his opinion on his microscopic researches, asserted that osteomyelitis is not to be considered an independent specific affection, but a pyæmia clinically characterized by its localization in bone marrow.



AMYLOID DEGENERATION OF BLOOD VESSELS (*150 Diameters*).

From a pathogenic standpoint there would seem but little, if any, difference between the pyogenic character of the micrococci ascribed as the cause of osteomyelitis, and the micro-organism associated with the suppurative process of alveolar pyorrhœa.

Gallippe ascertained that a pleomorphic organism which he found in the latter showed a predilection for the osseous system and affected the epiphyses suppuratively. At the point of fractures of the ribs, abscesses also formed.

Morphological consideration of these organisms must be postponed until further researches shall have elucidated the problem. Clinically considered, the processes of disease, those having special reference to the necrotic changes

taking place, are fairly identical. For whatever aberration of identity there might seem to be, would be accounted for by the anatomical difference between the long bones, for example, and the alveolar process. The etiological factors are broad and far-reaching in both diseases.

Embolus clogging of the arterioles, as claimed by Gussenbauer and English for the one, applies, as outlined above, also to the other. Predisposition to infection, the summing up of all factors, applies to both.

**Calcareous
Deposits in
Gum Tissue.**

I have recently called attention to the degenerations of the connective tissue elements of the gums, such as the colloid, lardaceous and calcareous types, and the fatty degeneration of the covering mucous membrane, associated with pyorrhœa. I had long observed small hard nodules studding the gums, and considered them inspissated products of the mucous glands. This supposition proved in later studies to be correct in many in-



COLLOID DEGENERATION (150 Diameters).

stances. It was only after I had occasion to pick minute calcareous bodies from out a deeply congested gum, and later in another instance was enabled to express by pressure masses of whitish soft character from innumerable foci, that I was led to examine more closely the products found. The whitish

masses were rich in oil globules, and convinced me that the glandular epithelial cells had themselves undergone fatty degeneration.

That the inflamed tissues of the gums, being subject to the same laws of nutrition as those of other inflamed connective tissues might show the same changes, was a proposition I next sought to establish.

A brief review of the recent investigations of lardaceous infiltrations and subsequent changes may be pertinent at this point.

Ziegler (Virchow's Archives, Vol. LXV., fol. 273) describes a local amyloid degeneration of the tongue and pharynx. Very thorough microscopic investigations have led him to assert, and prove very conclusively, that phlogistically altered tissues (connective) are especially inclined to harboring amyloid substance.

That as under certain conditions lime salts which had been held in solution in the blood are precipitated, so the albumen which circulated in the plasma is deposited with predilection, in consequence of an altered nutrition.

Klebs (Die Allgemeine Pathologie, Vol. 2, 89) places amyloid among albuminous degenerators side by side with colloid mucous and hyaline degenerations, that is, among those nutritive disturbances in which insoluble albumens are deposited interstitially and sequently are converted into amyloid. "A lowered cell activity favors the deposit of albumens."

Kraus (Localized Amyloid, Zeitschrift für Heilkunde, 1895, Vol. 6, p. 349), dealing with the genesis of localized amyloid disease, particularly that of the conjunctiva, is of the opinion that in most chronic inflammatory processes, nutritive alterations are created in the tissues which in turn cause a deposit of albumen *in loco*. He, too, seeks an analogy in the deposit of lime salts.

(To be continued.)

Non-Cohesive Gold, Its Merits and Manipulation.

BY D. J. McMILLEN, M.D., D.D.S.

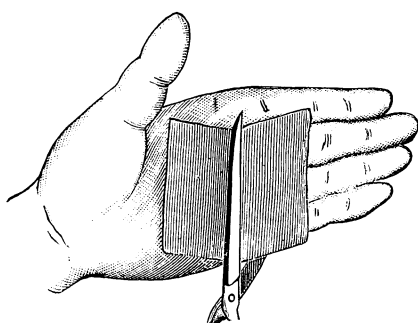
Dean, Western Dental College of Kansas City, Mo.

Illustrated by M. J. Brady, D.D.S.

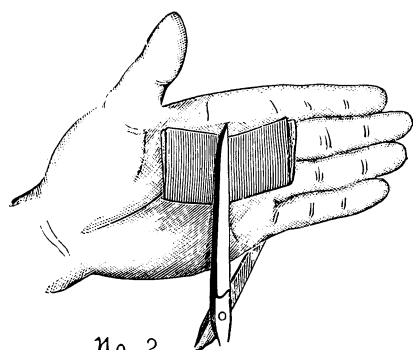
This article is presented with the understanding that the writer does not in the least antagonize the use of other forms of gold, nor of other methods of operating; neither does he use non-cohesive to the exclusion of cohesive gold, nor advocate its use except in those cases which are adapted to the successful use of the non-cohesive form or a combination of both forms.

There are undoubtedly many cases adapted only to cohesive gold ; but there are many cavities that are adapted to the use of a combination, which are ordinarily filled with cohesive only, and many others that are adapted to non-cohesive exclusively, which are filled with cohesive foil (if filled with gold at all), or more commonly with amalgam, both of which might be more easily filled with non-cohesive gold, and, especially in case of amalgam, much better filled.

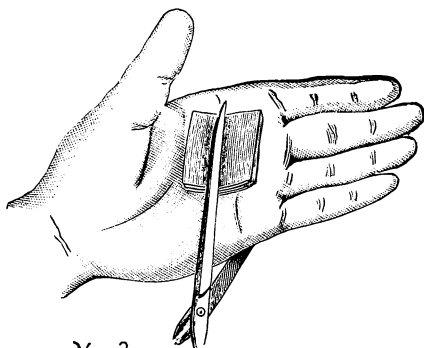
There is no doubt that non-cohesive gold is not esteemed as highly as it



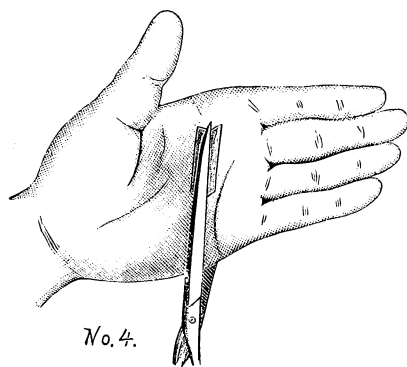
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should be by the profession. This arises from a lack of knowledge of its merits and its manipulation, which, if known and practiced intelligently would lead to a higher appreciation of its usefulness, and at the same time would lighten the burden of the over worked dentist, as well as improve the quality of his work. Non-cohesive gold is both a time saver, and a tooth saver, to say nothing of its saving in discomfort to the patient from rubber dam, clamps, ligatures and protracted operations. Its use is confined strictly to a special field, however, and to venture beyond this is to invite failure.

**Definition of
Non-Cohesive
Gold Foil.**

Just what non-cohesive gold is, should be understood at the outset. It is a foil *that is entirely non-cohesive at all times, and cannot be made cohesive by annealing.* Sheets of this foil have no more cohesion when condensed than so much tin foil or tea lead, and it must be prepared and inserted into a cavity in such a manner that each piece is held in place mechanically, with no dependence upon the property of cohesion, as in ordinary foil. Non-cohesive gold is sometimes known as soft gold, but the ordinary foil known as soft gold, which is only very slightly cohesive until annealed—when it becomes cohesive—is not the article at all. So far as the writer knows there are but three makes of absolutely non-cohesive foil on the market—S. S. White, Abbey & Sons, and Morgan & Hastings, and which are specified as “dead soft” or “absolutely non-cohesive” foils.

In respect to weight the writer uses No. 4 foil exclusively for non-cohesive work, as heavier does not make as adaptable cylinders. This gold is sold only in the form of foil, and must be prepared for use by the dentist himself, which is done by making it into cylinders of various lengths and diameters, the cylinders differing in length as the cavity is shallow or deep, and in diameter as the cavity is narrow or wide. Exactly what is required in regard to length or diameter will be given further on in this article, the method of making cylinders being explained first.

A large assortment of cylinders should be kept prepared for use, that the requisite variety of lengths and diameters may always be at hand during an operation, though some of the very large cylinders may be prepared as needed, bearing in mind that they should all be prepared before beginning a filling, that the operator may not be compelled to stop from the time the first piece is inserted until the very last is keyed in place. The writer keeps prepared not less than an entire book (one-eighth ounce) of gold at a time to give the necessary variety and number of cylinders. These cylinders are prepared by first folding a sheet or part of a sheet of foil over the palm of the hand by shears or spatula, into the form of a tape or ribbon, varying the width of the ribbon according to the length of the cylinders required, using a wide ribbon for long cylinders and a narrow one for short cylinders. The method of folding is shown by figures 1, 2, 3, 4. This ribbon must be so folded that each layer of gold in the ribbon reaches entirely across from one edge to the other, and no layer should reach only part way from edge to edge, as the filling will “flake” from cylinders made from such a ribbon.

**Preparation of
Cylinders
Described.**

The proportion of gold put in each ribbon depends somewhat upon the cylinders to be rolled from it. If short cylinders of small diameter are required, one-fourth to one-half a sheet may be used; if of medium or greater length, or of considerable diameter, from one-half to a full sheet may be

folded into one ribbon. Usually one-half a sheet makes the most useful ribbon for ordinary cavities. After the ribbon is folded to the width desired, cylinders are rolled from it by winding the tape on a gold roller, or broach, as shown in figure 5. As each cylinder reaches the diameter desired, it is torn or pinched from the ribbon, and the remainder wound upon the roller until all is used. Cylinders of all diameters may thus be made, and by a little practice may be made very neat and very quickly. These cylinders are rolled moderately tight, except those intended for the final key or "wedge" cylinder, which are rolled as tightly as possible.

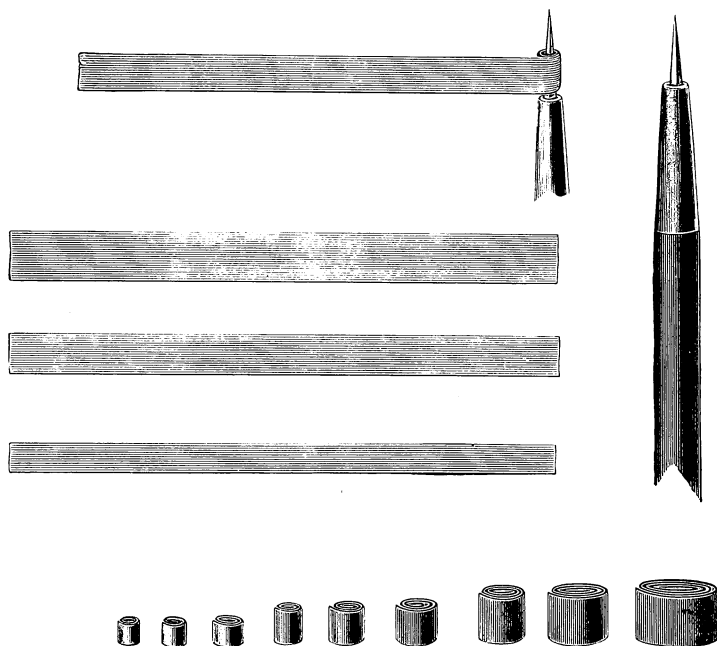


FIG. 5.

Common gold cylinders, such as are on the market, will not serve, both from the fact that they are not the right kind of gold, and are much too loosely rolled. The property of cohesiveness would be fatal in working gold after the non-cohesive method; the cylinders would not slip past each other in packing against the walls of a cavity, nor could they be pressed to the bottom of a cavity, on account of their cohering with the sides of cylinders already inserted. The cylinders stand on end in a cavity, and great care must be exercised to see that each one is pressed entirely to the bottom or floor of the cavity, especially the final key or "wedge." This makes necessary the use of foil pliers having stiff points. Light, delicate pliers will not do.

**Cavities Suitable
for this Method of
Filling.**

In a general way non-cohesive gold is adapted only to those cavities having four walls, which would include all coronal and fissure cavities in molars or bicuspid ; gingival cavities on the labial or buccal surfaces of all teeth ; cavities in the lingual pits of incisors, and certain cavities on the proximal surfaces when little or no contour is

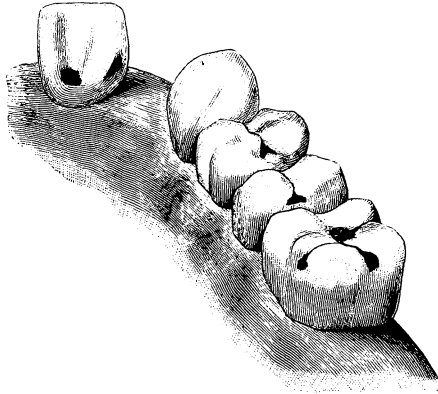


FIG. 6.

needed (Figs. 6 and 7). It is adapted to a combination with cohesive gold in cavities having three walls, when no extensive contour is required in that part which is to be filled with non-cohesive foil (Fig. 8). This includes cavities in

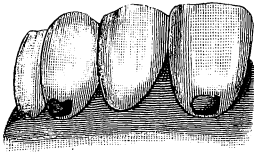


FIG. 7.

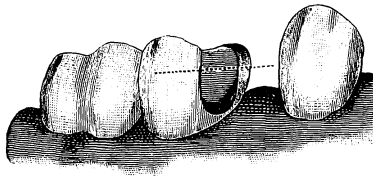


FIG. 8.

the bicuspid and molars, which involve the proximal and grinding surfaces ; especially deep seated cavities in these teeth. Non-cohesive gold is not at all adapted to cases requiring extensive contour, as shown in Figs. 9 and 10, and should not be attempted in such cases.

In non-cohesive work cavities should be prepared somewhat differently from those in which cohesive foil is to be used. All undermined portions should be cut away, all fissures cut out to their extremities, and the walls left as smooth and uniform as possible, the enamel margins being beveled much less than usual, yet sufficiently so to protect the exposed edges. The cavities must be made of some depth, as a shallow cavity cannot be easily filled,

though in no case so deep as to endanger the pulp. However, non-cohesive foil does not seem to be the same conductor of heat as cohesive foil, and a slightly deeper filling will not give the unpleasant results which obtain with so many cohesive fillings. The explanation of this the writer does not pretend to give, though it has been noted by all who have used the method extensively. The bottom or floor of every cavity must be rendered smooth and flat; an uneven floor does not permit a good filling. Cement may be used to

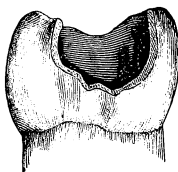


FIG. 9.

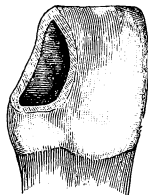


FIG. 10.

level the floor if needed, or a cylinder of gold may be laid flat and condensed down to give a smooth floor. No particular undercuts are necessary or desirable; deep undercuts or grooves must be avoided altogether. A very slight dove-tail extending around the walls of the cavity gives the best results. The dovetail need only be very slight, yet it should not be neglected, and should extend evenly around the entire circumference of the cavity; otherwise some of the cylinders might loosen and come out in time, or be forced

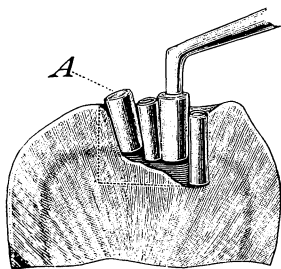


FIG. 11.

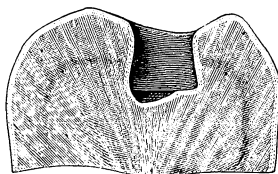


FIG. 12.

out by "wedging in" the last cylinder. Figure 9 shows a cross section of a properly prepared cavity, and Figs. 13 and 14 show improper preparations. The preparation of cavities for a combination of cohesive with non-cohesive foils will be shown when that subject is reached. I am constrained to give this minute detail of the handling of non-cohesive gold from the fact that I have received hundreds of inquiries upon these very points, and know from my own experience, and the experience of others, that success or failure de-

pend to a considerable extent upon the observance of this detail ; and while there is nothing difficult given here, yet I am convinced that a large majority of the profession know but little of non-cohesive gold or its working ; yet many would rise up and call it blessed if they would but persevere long

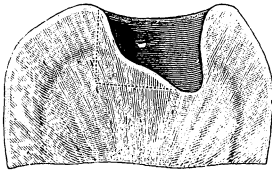


FIG. 13.

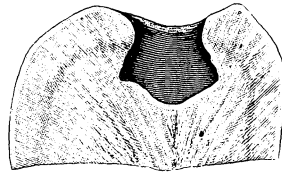


FIG. 14.

enough to become accustomed to its use, to say nothing of the encomiums of patients who are spared long and uncomfortable operations, while having their teeth filled with a superior material, and in many instances being delivered from that sometimes friend, and oftentimes foe, amalgam.

(To be Continued.)

The Dentist and Dental Literature.

By HENRY H. BURCHARD, M.D., D.D.S., Phila., Pa.

It is a truism that the literature of any profession is a fair reflection of the intellectual status of its practitioners and of the condition of the calling itself. If a reader of a number of dental periodicals will subject their several contents to a critical examination he will reach conclusions which will make the application of our leading premise a doubtful quantity and an unflattering quality. In one journal he will find a collection of material presented as dental literature, which has little or no bearing, direct or remote, upon any aspect of dental practice ; in another, contributions, published as articles dealing with practical dentistry, which are utterly and absolutely unpractical ; another contains, let us say, an alleged scientific article, which upon analysis is found to possess not the first characteristic of a scientific essay, unless it be the formal parade of meagerly scanned or partially digested facts which have questionable bearing upon the subject discussed. Another type of essay is the truly scientific.

**The
Scientific
Essay.**

It is worth while dwelling upon this last, as all sermons should be directed toward the exploitation of virtue and the condemnation of vice. As a matter of fact, any and all essays are scientific or they are unscientific; that is to say, they are written in such a manner that every fact or datum given in the essay is presented in its true relation with all of the others; facts which the essay may contain, if one thing is a cause of another, it is shown to be so and properly placed; if it is the effect of a cause, it is so stated so that the essay in its completed form represents an actual chain of reasoning based upon what the author believes to be facts; the facts and reasoning are clearly set forth, so that the critic may determine whether there be any false premises, anything accepted as facts which are not facts, or whether there are any flaws in the chain of evidence; that, then, is a scientific essay.

On the other hand, view the unscientific paper. It matters not whether this treat of the subject of the proper finishing of a vulcanite plate, or the correct mode of vulcanizing (both very important matters, by the way), or whether it deals with such matters as are discussed in the magnificent work of Dr. Black upon amalgams; the essay will be scientific and will possess enduring value, or unscientific and of questionable value and short life, according to the mode of presenting the subject. The unscientific essay is characterized by either a false assumption of data; that is, matters are accepted as facts which may not be facts; or, should the facts be unquestionable, the mode of presenting them may destroy their immediate value. Statements which have no actual relation to one another are given in such a manner as to imply a cause and effect existing, which does not exist between them, the entire essay becoming at once misleading, dangerous to the uncritical reader, and petulantly thrown aside by his more critical brother.

**The Attitude
of the
Profession.**

The time has passed when investigators and writers on dental scientific matters can be safely stigmatized as dreaming theorists; dentistry, as it is practised to-day by its best exponents, is not only an art of a high order, but one every step or stage of which rests upon a scientific foundation. It is not only necessary in this age for a worker in operative or prosthetic dentistry to show that he has manual skill of the first order, infinite patience, and inflexible honesty; but he must show *why* he does as he does; not merely *how* he does an operation. His hearers, observers or readers are no longer content to know that he prefers to use amalgam, and how he uses it; they insist upon knowing why he uses it, and his why must be founded upon good and rational grounds or his methods are set aside and even his manual skill virtually ignored. Every dentist must be not only a mechanic of a high grade, and this is no small thing, but he must also be a scientific mechanic.

I assume, with a faith justified by a personal familiarity with many practitioners, that our common and primary object of life has an altruistic tinge; that while as mindful of our personal interests as all honest men should be, we are animated by a desire to have our practice bring the greatest measure of good to humanity; that doing our duty by our patients is of greater importance than enlarging our bank accounts, or pandering to our indolence. Of course, if a reader reject this premise, the present essay has no significance and the writer urgently advises him to get out of dentistry and open a pawn shop, or if his conscience be of a still lower order, become a stock speculator.

Dental articles on whatever subject are rational, that is, scientific, or they are unscientific and therefore irrational. Articles in dental journals which do not deal with dental subjects, are beyond the pale of classification; they may be pseudo-theological, or deal with our personal morality, or may treat of spelling reform, and so on *ad infinitum*. These, interesting though they may be to "long haired men and short haired women," have no interest for the dentist, who is a dentist, and not a tea party theologian.

Perhaps there never was a publisher of a dental journal who did not hear complaints from a greater or less number of subscribers, if the contents of the journal were what they stigmatized as scientific. They clamor for what they call practical ideas. It is this class in particular, to whom the scientific essay has the greatest actual value, presuming, of course, that they mean by practical, matter which can be directly applied in dental practice.

Take a brief survey of the notable scientific work in dentistry during thy past year. The work of Dr. Cryer in anatomy of the jaws; the researches of Williams in enamel formation; Dr. Black's second studies in the physical properties of amalgams and of the teeth; the essay of Hugenschmidt, on "Oral Immunity"; the application of the X ray, and Walker's studies of the temporo-maxillary articulation; these are the essays described as "too scientific," "too deep," "theorizing," and so on.

In the same journals in which these articles appeared, and in many other journals, were scores of articles which were read, aye, were studied and the uncritical readers smiled upon them; and yet, roll together all of the journalistic literature of the past year (including my own) with the exception of the essays quoted, and possibly a few others, and cast it into the fire and dentistry would not feel its loss. Destroy or ignore Dr. Black's work alone, and future generations of dentists and patients would curse our memories.

**Practical
not Always
Scientific.**

Did space permit, it might be shown that in the essays specially named, every demonstrated fact given has a direct, practical and valuable application to the daily practice of the dentist. One item, for example; every succeeding year brings a description at some Society meeting, of

how the practitioner fills cavities opening upon the masticating surface of molars ; non-cohesive gold, in the body of the filling ; a veneering of cohesive gold covering it ; margins perfect and finish beyond criticism. The filling is perfect ! Is it ? Dr. Black has shown that the pressure received by such a filling during mastication is sufficient to compress the non-cohesive base, and drive in the hard veneer ; not enough to make a visible break, but quite enough to admit the actual causes of dental caries. Or again, a bicuspid having a broad masticating surface, and a constricted neck, has its lost contour restored by means of cohesive foil, malleted and adapted, finished perfectly, anchored by a retaining groove and resting upon a base much narrower than its masticating surface. Dr. Black has shown that actual change of shape of the filling at the cervical wall may occur and a crevice appear ; wherein steps the "compatibility man," upon one hand or the "faulty adaptation" critic upon the other. A shallow but very large cavity upon the masticating surface of a molar is filled with amalgam, perfectly filled, and after a period the edges are found to rise from the cavity margins, the filling appears too large for the cavity ; before Dr. Black's work it would have been said that there was "bulging," but he has shown that the substance which we believed rigid and yielding has "flowed," has altered its form under stress.

Of two operators of equal skill, one condemns, the other indorses amalgam ; both manipulate the material alike. One finds crevices about his carefully inserted and polished fillings, and secondary caries occurs ; the other reports margins and finish maintained for years. Dr. Black's work shows that these differing results are due to the alloy used ; not only states it, but proves it.

Two men use the same alloy, one has good, the other ill results ; the same work will show not only that differences of behavior are due to differences in mode of manipulation, but exactly where these differences are. Knowing the behavior of definite alloys and under different conditions and mode of manipulation, practice may be directed to obtaining uniform results instead of endless variations.

Turn now to Dr. Cryer's work. For years the dental and also the surgical world, have accepted stereotyped descriptions of the anatomy of the jaws. Obscure diseases have been operated upon again and again, purely upon a basis of guess work, and with what result ? Dr. Cryer by sections of hundreds of bones has shown us beyond a doubt the reasons why diseases which usually run a definite course, may have a variation which, thanks to his "scientific" work are to have the cause sought out, instead of spending time and means in vague speculation, and endless consultations.

Apply his work to a study of maxillary abscess alone, and let the practical man be duly grateful and appreciative.

For generations, the prosthetic dentist has practised as though his work

were built upon the theory that the human mandible had only two movements; a horizontal, in cases where no cusps were allowed upon artificial teeth; and vertical, where the cusps overlapped.

For years many of us have fallen asleep at Dr. Bonwill's lectures (when he would let us), in which he taught us the laws of human articulation, and showed us "practically" how we could apply them to the betterment of patients who wore artificial dentures. What has our practical man done with the eminently practical item?

Dr. Walker has measured with care and observed with accuracy the movements of the head of the mandible, recording differences in the angle of movement and its lateral extent. An anatomical discovery, says the practical man; what use can I make of it? Upon this movement and its variations depends entirely the contact of the surfaces of the teeth in the movement of mastication.

Turn to Dr. Black's work and note how much force, in pounds, it requires to crush food, and how many pounds pressure can be exerted by artificial teeth. Make the contact of tooth surfaces inaccurate, and how much is the force lessened? Make them perfect, as pointed out by Dr. Walker, and there is a corresponding increase. This means that instead of the wearer of artificial dentures presenting to the stomach masses so large that perfect digestion is impossible, the food will be crushed, and the dyspepsia of the artificial denture will be cured. What can be more practical than this?

No dentist who has manifested interest in bacteria has failed to wonder why it is that in a cavity swarming with bacteria, as the mouth is, lacerated wounds such as caused by the extraction of teeth are not followed by septicæmia. Dr. Hugenschmidt gives us the answer, and the practical men yawn at the mention of the essay. The latter individuals, whose name is legion (their census is easily taken, for they boast of the title, but misapply it), should take heed; the ostrich-hiding, in which they indulge, will some day be a boomerang. The public at large is developing a familiarity with dental subjects, and the scientific basis of its practice, and questions of an embarrassing and sometimes perplexing nature are put to the operator.

It may be excusable if a dentist does not keep abreast of all the scientific advances of his profession, but a spirit of caution should prompt him to be at least ahead of the laity in the knowledge of the progress of his specialty.





Compatibility between Tooth-Bone and Filling Materials.

BY F. S. VAN WOERT, M.D.S., Brooklyn, N. Y.

Read before Second District Society in Brooklyn, November, 1896.

The general consideration given to the adaptability of filling material to tooth structure seems to be more from a theoretical than a practical standpoint, that is, if we are to be guided by what is written on the subject. From the very foundation of all science, theory and practice have clashed, notwithstanding which one is as necessary to the success of the other as proper nourishment is of the maintenance of life and health; so that I should not deprecate the efforts of theorists but rather regret the limited expression given to the more practical clinical experience of the careful practitioner. It is but a short time ago that a very extensive series of experiments made by the eminent Dr. Black, and recorded in the *Cosmos*, created an impression in the minds of many of our members, particularly the younger ones, that their efforts had been falsely directed, and that an immediate reform should be organized, upon a gold standard, which, if they persistently follow, will surely defeat their ambition for success in professional life.

That hard and soft teeth are of the same chemical composition, we will not attempt to dispute. But that there are hard teeth and that there are soft teeth, we cannot deny, and that hard teeth will stand more natural and mechanical interference with their structure than the softer ones, is equally undeniable; hence Dr. Black's deduction that gold is the best preserver for all teeth may be plausible in theory, but very impractical in application.

It is my purpose to review a personal experience of the last eighteen years, together with what I have gleaned from my contact and intercourse with many dentists of noted ability.

The object of the scientific and conscientious practitioner, is, first, to preserve teeth from the ravages of decay; second, in so far as possible, to

correct any malformation of the organs of the oral cavity. But it is with the first difficulty that I shall deal, and this only in so far as the materials at our command are adaptable to the structure with which they come in contact.

That it may be better understood, I will consider, first, the different materials separately, and later their combinations.

Cements, or the oxy-phosphates, are probably the least to be relied upon as preservers of teeth, particularly when caries has encroached upon the approximal surfaces, or broken down the structure below the gum margin; still, there are many cases where it would be almost an impossibility to save teeth with any other material; for instance, where the waste has been so great that sufficient anchorage cannot be obtained without sacrificing the strength of the remaining structure for the support of a material possessing no adhesive properties.

Realizing perfectly the care and careful watchfulness necessary when driven to the use of these materials, still this is better than that the teeth should be lost, or badly disfigured, in an effort to substitute any other composition or pure gold. Therefore, in my practice, the oxy-phosphates hold a very prominent place for other than the setting of crowns, bridges, linings, cappings, etc.

Of all the agents placed in our hands to relieve suffering humanity, there is none which is so thoroughly abused as this; but with all its abuse it remains a friend to the unskillful, as well as to the skillful operator. It will tolerate any amount of maltreatment, and in return save more teeth than any material at our command. It is inartistic and homely to those unacquainted with its virtues, but back of all are the good sterling qualities which will keep it prominent for generations to come. The day is not far distant when the scientific and skillful manipulator will erase every smirch from its character and place it where it belongs, hand in hand with gold.

I have seen amalgam fillings that were as much a work of art as any gold filling, and it was simply the color line which divided them.

Do not understand me as being an amalgam fiend or crank, for I am far from it. To the contrary, the greater number of my operations are in gold, for æsthetic reasons only, but the other has its place, and the sooner we all learn to follow that old maxim, "a place for everything, and everything in its place," the better we will serve the public, and reach the goal of our ambition, fame and fortune.

How are we to get the best results? By giving just as careful attention to all the details in preparing for the introduction of amalgam as you would for gold, and before placing it to protect the tubuli with a lining of some kind,

**The Merits and
Demerits of the
Plastics.**

**The Use
and Abuse of
Amalgam.**

as for example, chloro-balsam ; and by properly mixing the filings with the mercury. In this I succeed best by placing both in a small piece of rubber dam ; draw the rubber tight around the mass and rub it briskly in the palm of the hand, which will make a smooth paste ; then relieve it of the excess of mercury by squeezing between the thumb and first finger, wash with soap and warm water, and proceed to fill, burnishing small pieces into place with burnishers of suitable size to reach all parts of the cavity. If there is a contour of any extent, soft gold foil can be added with marked advantage. This is best accomplished by burnishing to place in single layers. In all cases these fillings should be carved and polished at a later sitting, when they have become thoroughly hardened.

**The Skillful
Manipulation
of Gold.**

The perfect management of gold requires a certain amount of dexterity that is only acquired by practice, and, like swimming, when once mastered is never forgotten.

The extent to which artistic contours are restored depends largely upon the natural ability of the operator. With gold it seems to be more than the mere salvation of a tooth or teeth ; the *par excellence* of beauty is the pinnacle to which all aspire. There are some who pride themselves on the large amount of gold which they are able to condense into one cavity, losing sight of the fact that adaptation to the cavity walls, with sufficient density of the surface to withstand attrition, is what is required to make a serviceable and beautiful operation, and to my mind is far preferable, first, because it is less tax upon the strength of both the patient and operator ; second, it is not as liable to fracture the walls when introduced, or later while performing its function, as a substitute for lost tooth structure.

Before touching upon the combinations of the materials named, I wish to define my views as to the adaptability of each to tooth structure, when used separately.

Cements or oxy-phosphates in such teeth as are so wasted that sufficient anchorage cannot be obtained to support a filling which does not possess adhesive qualities.

Gutta-percha, in obscure and inaccessible cavities, particularly teeth of very soft structure, or in buccal cavities at the gum margin of chalk-like teeth, and in temporary or deciduous teeth. Amalgam in all the posterior teeth where the cavities are so large that good, strong walls cannot be obtained without devitalization of the pulp, and last but not least, where the condition of the patient's pocketbook will not permit of extensive operations in gold.

Gold in all cases where the structure and cavity walls are of sufficient strength to permit of its introduction and maintenance, without sacrifice of the parts to which it is attached ; and as stated under amalgam, when the financial condition of the patient will permit.

Combination of Filling Materials. Combining two or more of the materials named above, has proven the most satisfactory of all methods to me, in filling either hard or soft teeth. I am satisfied after years of careful observation that wherever it is possible, the inner structure, or dentine, should be protected from direct contact with any of the metal fillings. I find that either gold or amalgam gives far more satisfaction when used in combination with the oxy-phosphates; and in many cases all three are decidedly advantageous when combined to make one filling. Years ago, Prof. Flagg of Philadelphia introduced a method of combining oxy-phosphate and amalgam while in a plastic state. After preparing the cavity he placed a small portion of cement in the bottom of it, and packed soft amalgam in while it was yet a sticky mass, the result of which was a thin coating of cement between the wall of the cavity and the alloy, the excess of the cement being forced out at the margins during the burnishing, the margins being carefully cleansed with a suitable burr, that the amalgam and enamel might come in direct contact, to prevent washing of the cement at that point. This proved so satisfactory that I was led to the use of other combinations, with equally good results. And to those who never have used a combination of filling materials, the following may prove of some value in future practice:

Oxy-phosphate and Gutta-percha. In bicuspid, usually, and sometimes in molars where the cavities extend well below the gum line, particularly on the approximal surfaces, in teeth of soft or chalk like structure, prepare the cavity in the usual way; coat the floor with chloro-balsam, and fill with gutta-percha to about one-sixteenth of an inch above the gum line, the rest of the filling to be made with cement, and finished as before described.

This gives a filling possessing all the advantages of a complete cement filling, namely: strength for contour, and adhesion for anchorage, without the disadvantage of waste at the margin, which is the defective point of all cement fillings.

Gutta-Percha, Oxy-phosphate and Amalgam. Being a thorough convert to the belief that cements, when placed in too close proximity to the pulp, will cause its death, to prevent this, I roll gutta-percha in very thin sheets, cutting from it a piece of suitable size to cover the floor of the cavity; this I place on top of a coating of chloro-balsam, following with cement and amalgam after Flagg's method, depending upon the chemically aroused heat of the cement to soften the gutta-percha sufficiently to cause perfect adaptation to the walls of the cavity. This combination is applicable to all cases when there is sufficient strength of wall to support an amalgam filling; in the molars or bicuspid of soft structure, and where the financial condition of the patient will not permit gold.

**Oxy-phosphate
Combined
with Gold.**

This makes one of the most pleasing and durable fillings that I know of, when gold is used in cavities above the gum line.

In preparing for the introduction of this combination, the cavity should be shaped as for cement or amalgam, deep under-cuts for anchorages being unnecessary, the general difference between the opening to, and the body of the cavity in size, together with the adhesive properties of the cement being all required to hold the filling.

If I am not mistaken Prof. Flagg was the first to introduce this, as well as the method described above on amalgams, and is as follows: Cement in sufficient quantity to about half fill the cavity is placed in position, and while plastic and sticky, gold pellets are pushed well into the mass, as close together as possible; then allow from ten to fifteen minutes for it to harden, after which cleanse the margins of any cement that may have been forced over them, and finish by malleting the rest of the gold, to complete the contour. If a tooth is filled out of the mouth in this way, and then broken open, you will find by removing the cement, that the gold looks very like a heavy swedged shell with a number of headed pins on the under or inner surface. Such fillings are very advantageous in teeth with thin walls, and of soft structure; much more so than if all gold were used.

**Amalgam
and Gold
Combined.**

Again I acknowledge the advantage of Prof. Howard's methods, by giving the details of his operation for combining these metals in one filling; and in connection with this, I will give you an idea of how I use the dam, say with first and second molars, when performing Prof.

Howard's operation.

First, cut *one* hole in the rubber large enough to permit of its being stretched over the *two* teeth; next with a curved needle, pass a piece of silk floss through both sides of the dam at the point where it can be used to draw the same together between the cavities and tie. Dry as near as possible, then warm enough modelling compound to fill both cavities, and after cooling carve from one of the teeth sufficient to form a matrix; now fill that portion of the cavity below the gum line with amalgam, building to about one thirty-second of an inch above it, and while yet soft, add gold in small pellets with a burnisher until it ceases to show the absorption of mercury, finish by condensing the rest with a mallet in the regular manner.

One point to be remembered before beginning the condensation of the gold as last stated, is to cut away the compound from the margins to the point where the burnishing ceased, that the adaptation may be made without the aid of a matrix.

The advantage of a filling of this kind over one made entirely of gold, is that a perfect joint is made with the amalgam at a point, which in most cases it would be impossible to accomplish with gold. If the operation is properly

performed, it is very difficult to distinguish such a combination from its neighbors of pure gold.

The prevailing mistake in the use of cements is in the method of mixing. If care is taken to incorporate the powder with the fluid in such proportions as to insure a perfectly smooth mass, and not stiff enough to lose its adhesive qualities, a very much more serviceable and durable filling will be made. Another great mistake is the continued fussing with the filling during the process of its setting. To obtain the best results it should be allowed to stand from ten to fifteen minutes; at the end of which time, it should be shaped and polished, then coated with a thick varnish made of canada balsam, or colloidion, understanding, of course, that all precautions are taken in the beginning of the operation to protect the parts with the dam, etc., just as in the manipulation of gold.

**The Use and
Usefulness of
Gutta-Percha.**

Gutta-percha has no superior as a tooth saver where the structure is soft, and the cavities in obscure or inaccessible locations, as well as in cavities on the buccal surfaces at the gum margin, and in the labial surfaces of the inferior anterior teeth. For the best method of intro-

ducing this material, I am indebted to Prof. Howard, of Buffalo. Prepare the cavity in the usual way, drying thoroughly with the hot air syringe, then varnish the inner surface with chloro-balsam, and place the gutta-percha in small pellets, packing with instruments heated from ten to fifteen degrees warmer than the pellets are, when taken from the warming plate. I find the best mode of warming gutta-percha and not over heating it, is to place it on a small plate, or metal slab, over boiling water, and the instruments with their points immersed in the water, which gives about the required difference between the two. The filling, as in the case of the cement, should be allowed to stand from ten to fifteen minutes before polishing, which should be done very carefully to avoid pulling it away from the margins. If the direction of the force required is from the center to the circumference, that is to say, if in using a disk, it is made to revolve so that the surplus is carried from the center of the filling surface, towards the cavity margin, such heat as is generated by the friction will consolidate the material at the point where it is most needed, viz.: the cavity margin. Chloroform should never be used for finishing, as it dissolves the gutta-percha, and leaves a rough granular surface, principally of zinc oxide, which soon becomes so coated with the secretions of the mouth as to be filthy in the extreme. If allowed to get hard, trimmed carefully, polished with cuttle disks, and lastly burnished, results are obtained that would be impossible in any other way.

Gutta-percha is a most valuable filling for temporary teeth, even the inferior grades of base plate gutta-percha serving admirably to preserve many teeth, until nature supplies the second or permanent set.

Dental Jurisprudence.

By DELANCEY B. ARMSTRONG, D.D.S.

Read before the Jefferson Dental Society at Clayton, June 13, 1896.

The general principles of Medical Jurisprudence apply equally well to the dental practitioner, but there are certain special questions which arise exclusively in dental practice.

Owing to the advance made in dental science, embracing the discovery of many new operations and methods of treatment, increased responsibilities rest upon the dental surgeon, the neglect of which might involve him in litigation and the knowledge thereof may at some period in his professional career avert a calamity of a serious nature.

Dental jurisprudence may be defined as the science which teaches every branch of dentistry to the purposes of the law; hence its limitations, on the one hand, are the requirements of the law, and on the other, the whole range of dental knowledge, anatomy, physiology, therapeutics, materia medica, chemistry, operative and prosthetic dentistry, and oral surgery.

When we begin our studentship, we look forward with yearning to the time which we will have acquired sufficient knowledge and experience to be vested with the degree, Doctor of Dental Surgery.

Let us inquire what legal protection is afforded to the dentist by the degree, D.D.S. What are the limitations of the practice of dentistry, and what is the legal right of the dentist to administer remedies systemically?

In considering the legal protection afforded to the dentist by the degree D.D.S., two important topics—"the legal right of the dental practitioner to perform any and all operations within the limitations or domain of dentistry," and, "the legal right to administer remedies systemically"—are presented for conclusive legal interpretation and discussion.

**Legal Limits
of the
Dental Domain.**

In discussing these questions, it is of first importance to describe the "limitations of the practice of dentistry," or, in other words, what may properly be considered as included in the professional duties of the dentist. Undoubtedly, the care of the teeth when sound, the treatment of their deformities when unsound and unhealthy, and the adaptation of substitutes for them when by age, accident or disease, they are lost. It also includes the extraction and filling of the teeth, and other operations upon them, their alveolar processes, and, in some cases, upon the adjacent bones; transplantation, replantation and implantation of the teeth;

the treatment of the diseases of the teeth, gums and antrum—surgically, medicinally, or by both. These latter operations mark the limit which separates dentistry from oral surgery. He must be competent to perform any operation, treat any disease or pathological condition pertaining to the dental organs, and adopt and practice such systemic treatments as are promulgated by the body of the profession.

A prominent dentist erroneously asserted that M.D. is the only degree that can protect the dentist in serious results following surgical operations, and that the law will not find him blameless, who without this degree essays operations from which evil results follow. This statement is fallacious. That a dentist is licensed to perform any and all operations within the domain of dental surgery, there can be no dispute, providing, of course, that he complies with all the laws and enactments regulating the practice of dentistry in the country, state or county within which he resides. He is expected to render to his patient the best services and treatment which his ability will allow. The law expects and demands that he be possessed of an average amount of skill and knowledge of his profession; if he lacks that, or neglects to use it judiciously in the treatment of a case, or in a surgical operation, he is liable for malpractice, should serious results follow any operation he may perform.

Like other scientific professions, dentistry is progressive; its field of operations has become extended within late years, and operations which, in former years, were not permissible, are now perfectly legitimate. So, also, with the medical profession. Many operations are performed, perfectly legitimate, which formerly would not have been countenanced by the law, had serious results followed, and had there been a suit at law.

**Experimenting
With New
Methods.**

A dentist cannot experiment with his patients to their injury, without liability to damages for the same. But, a dentist, in performing an operation or treating a case, may have a new method of treatment or operation suggest itself to him. It may be only a deviation from or improvement upon an old method. However, if he has good reasons, and could prove that it possessed advantages over the old method, he is privileged to practice the same, or, when such operations become popular and accepted by the body of the profession as practical and beneficial to mankind, then, and then only, is he, according to the accepted views of the courts, licensed to perform them. In certain operations, the circumstances may vary; each case may present novel features, and, of course, it is not to be expected that every one will be successful. However, the physician or dentist will not be held liable for adverse results, if he can prove that he pursued the course of treatment, or method of operating advocated by others, in cases of the same character, and that he used an ordinary degree of skill and knowledge. He can vary the treatment and method adopted by others, if he can give sufficient good

reasons for doing so, and prove to the satisfaction of the court that they are founded on good judgment and authority.

Day by day new operations are discovered, legitimized and added to the science of dentistry. Those that are adopted and adjudged by the body of the profession to be necessary for the benefit and advancement of the health of mankind, the dentist is expected to practice ; at least this is what the community and his patients expect of him, viz., that he should give the best services and the benefit of any new discoveries in science. In court, the expert testimony, the lawyers and jury would determine whether such knowledge could be required of one who possessed an average degree of skill and knowledge of his profession, where negligence and lack of this skill and knowledge was the charge against the dentist.

May Dentists Administer Anæsthetics?	Some dentists doubt their legal right to administer anæsthetics. These views are erroneous, as it is expected of the dentist, where he can mitigate or lessen pain, that he should do so, and if the operation demands it, he should administer an anæsthetic. We find that the skill de-
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manded of him is held to include all the known rules which the experience of the profession have discovered and advocated. He must thoroughly understand all of the practical details of the operation which the court would hold to constitute only ordinary skill. If he can prove that he thoroughly understands the modes of administration of anæsthetics precautions to be observed, etc., he is not liable for adverse results, provided he applied his knowledge to the case at issue.

A prominent dentist has made the following erroneous statement : "If a dentist should administer an anæsthetic, and the patient should die, what is the result? The physician can give a death certificate, but the dentist cannot." This is absurd. If a patient dies while under the effects of an anæsthetic during an operation, the physician must notify the coroner, exactly as a dentist would be required to do, and cannot give a death certificate in such cases. If he cannot prove that he used the requisite skill, he would be held liable just as a dentist would be under similar circumstances.

Administration of Internal Remedies.	Some dentists doubt their legal right to treat cases by internal medication. This belief should be corrected. Dentists must prescribe medicines in certain cases, as for example : In the treatment of carious teeth, or any pathological conditions of the dental organs of a patient in an anæmic condition, due to improper food and nourishment, where is the well educated dentist who does not recognize the fact that in order to insure success, he must prescribe tonics, perhaps a change of diet, and treat his patient constitutionally, producing a tonicity of the general system? In the South, the dentists prescribe quinine for the cure of malarial neuralgia, without the
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use of instruments. In trigeminal neuralgia, in most cases, relief can only be obtained by constitutional treatment; and, in the severe forms of alveolar abscesses, internal medication is absolutely necessary.

If it be granted that the dentist is licensed to treat every disease, and perform all operations in dentistry, how can he be successful, if at the very outset he is handicapped by being prohibited from prescribing such remedies as are beneficial, and which the case indicates and requires? If it be admitted, that we are licensed to treat all such cases, where can the responsibility rest, if adverse results occur in cases where internal treatments have been used, providing a legitimate course of treatment was pursued in the case?

A dentist should certainly be held responsible for neglect, if he does not use internal treatment, in cases which positively require it, and where failure can be attributed to this negligence or want of skill and knowledge. Of course, it is not expected that he prescribe remedies, unless he is thoroughly conversant with their effects, and the proper mode of administering them.

Dental Malpractice Defined.	Dental malpractice may be defined as bad or unskilled practice on the part of a dental surgeon, whereby an unskillful operation is performed, the health of the patient injured, or his life destroyed by the improper and careless administration of medicines or anæsthetics.
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In the performance of all dental operations, the dentist is required to use at least ordinary skill. He must adopt the means and apply the skill and treatment advocated by the highest and best authorities in his profession. Should the practitioner inform his patient of his lack of skill, or should he learn from other means, the patient cannot complain of that which he knew did not exist.

Again, a dentist is not bound to use the highest degree of skill, but he must use reasonable skill and diligence, and in judging of this, regard must be had to the recent advances and improvements.

A dentist cannot experiment with his patients and must exercise judgment and care in undertaking to perform a new operation, or to use a new instrument. Should injury result from experimentation with new instruments and methods, he can be held liable in damages for the same.

Higher Responsibility of Specialists.	The law recognizes a difference existing between the relative skill and knowledge of a specialist and a non-specialist. A dentist announcing himself to the public as a specialist in any branch of dentistry, whether in bridge or crown operations, diseases of the mouth, administration of nitrous oxide gas, orthodontia or operative dentistry, is by law supposed and expected to possess more than the ordinary skill, or knowledge of the subject, required of a general practitioner.
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He is expected to possess and practically use the highest skill and knowledge his profession has attained on the subject.

**Legal
Status of
Fees.**

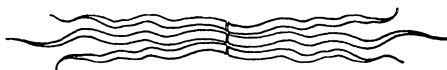
In regard to services and the compensation for the same, I find that a dentist cannot be compelled to render service to a patient when requested, but when once he has taken a case he must continue his services, unless dismissed, until other attendance can be obtained, even if the services be gratuitous. A dentist has a right to charge for time lost by an unfilled appointment. The decision of the court will depend upon the circumstances and evidence produced. A dentist has a right to retain a set of teeth made or repaired by him, as security for reasonable charges. This lien is waived by parting with possession or agreeing to give credit for them.

Legally, no limit is placed on the fee a dentist may charge for his services. A practitioner may charge more or less, using his discretion, estimating the value of the service which he renders. The value of the services of all professional men is not alike. An eminent practitioner, with an established reputation and long experience, can reasonably demand a larger fee for the same service than a less experienced practitioner.

The variety of circumstances—as the nature of the disease, the amount of knowledge and skill required in the treatment, the circumstances under which the services were given, the difficulties and expense attending them, and the responsibility devolving upon him—regulate the value of the services of a professional man.

I think there is a tendency among dentists to belittle their services, saying to themselves that the fee charged is sufficient, and depriving themselves of the extra remuneration that might be gained if they held a higher estimate of the value of their own work.

In conclusion, I would say that the law affords us greater protection, greater latitude for operations, and greater respect for our work, from a pecuniary standpoint, than is generally supposed, and we ourselves are to blame if dentistry does not always stand as one of the noblest and most respected professions.



The Acid Treatment of Root Canals.

By C. P. WEBSTER, D.D.S.

Read at the Annual Meeting of the New Hampshire Dental Society.

Doubtless more than one can recall instances where through undue haste leisure became a necessity, in order to coax from its hiding place the business end of a Gates Glidden drill.

Such memories quite prepared me to become interested in the clinic of Dr. A. C. Hull at the Union Dental Meeting, in Worcester, last October, where he showed his method of "Chemical Opening and Sterilization of Root Canals;" especially was I interested when he said that he rarely used drills in enlarging pulp canals, and pitied those men who do.

Dr. Hull applied undiluted muriatic acid, though he had used sulphuric acid, neutralizing with bicarbonate of soda, with good results, but was then using muriatic acid and neutralizing with Labarraque's solution.

It was in November when I first tried this method. Previously I used mechanical means, depending upon drills and broaches to make root canals clean. My first case was a young woman having two pulpless lower molars which nine days before had received as thorough treatment mechanically as could be given at one sitting. This day the root canals were washed out with a fifty per cent. solution of sulphuric acid, and then neutralized with bicarbonate of soda. At a later hour of the same day, a patient presented a superior incisor, with decided pericementitis resulting from her neglect to keep appointments for the removal of a dead pulp, which had been vented several weeks before. In her case I did not hesitate to use the C. P. sulphuric acid, undiluted.

A short time after, two cases claimed attention, one having a pulp recently devitalized, the other with pericementitis of a tooth from which the pulp had been removed some two years before.

Into these the sulphuric acid was worked full strength and from that time on it has been my general treatment for sterilizing and opening root canals. Whether I have a fetid dead pulp of questionable age, one recently devitalized, or a case for the extripation of a living pulp, it matters not. With me this treatment is a valuable help for cleansing and antisepticizing pulp canals for immediate filling.

Do not understand that I claim sulphuric to be superior to muriatic acid, only that I use the first named and succeed well with it.

Description of Practical Cases.

The teeth thus treated since November number nearly sixty, too few and too early, some may say, to judge of results. The point is that this method is both scientific and practical, especially in the difficult roots of molars.

**The Method
Shown to be
Scientific.**

First, scientific, because of the nature of the agent used, and its action upon the tissues involved. In our *Materia Medica* we find sulphuric classed with the mineral acids; that they attack living tissue with great energy, abstract water and combine with potash, soda and lime salts. In virtue of these qualities they cause destruction of tissue and are called escharotics. Dr. Edward Curtis, in the "Reference Hand-Book of the Medical Sciences," says: "Sulphuric acid has an intense affinity for water Thus by dehydration," he adds, "textile fabrics and animal tissues are destroyed."

Is not this what we desire? To dehydrate, decompose and destroy all organic tissue in the canal? While doing this work by reason of its chemical affinity for salts of calcium, it also enlarges the canal.

Its one phase of danger is its powerful caustic properties, so penetrating and deep in its action upon soft tissue as to be undesirable. But this need not concern us much, for there is little chance of mischief except in case of an abnormally large apical foramen and an unnecessary quantity of acid.

I notice that pain is usually experienced when the acid reaches the apex of the tooth, but is not of long duration or great severity, for by the time the work is completed the tooth is comfortable. We know the quantity of acid reaching the apex is very minute, and, I believe, all caustic action is soon lost by reason of its chemical union with the lime salts.

By way of experiment, I placed on a small piece of muscle tissue an equal quantity, by weight, of sulphuric acid. In the space of half an hour the acid had turned to a brown color, and the piece of flesh was brown and pulpy. It had lost its fibrous quality and could be spread much like butter. Its molecular structure seemed wholly broken down.

This result was also noticeable with a piece of beef half the size of one's finger which was treated with the equivalent of its weight of acid, and left undisturbed for twenty-four hours. In this case there was present a piece of superficial fascia one-sixteenth of an inch thick, and this had suffered the same destructive action, being nearly as soft as the muscle fibre.

**The Method
Proven to be
Practical.**

Now as to the other claim: It is practical, because it can easily be made to do these things where it can be applied. My usual procedure is as follows: After adjusting the rubber dam, free opening is made into the pulp chamber and such parts removed as will readily come away with the broach. I have at hand on an inverted tumbler one or two

minims of C. P. sulphuric acid, and in another receptacle bicarbonate of soda and water, mixed to the consistency of paste.

Upon a small piano-wire broach wrap two or three fibres of cotton, just the least bit, to entangle and hold a small bead of the acid. Carry this quickly to the canal to be treated, for if the action is slow or delayed, the cotton is destroyed and the acid drops from the broach, and woe to the fabric upon which it falls. Carry the broach with the acid well up the canal towards the apex, if possible working the broach actively to disintegrate and remove particles of pulp tissue and adhering membrane. If the first small bead of acid does not fill the canal, add another, and after the space of one or two minutes, carry liberally on the same broach the alkali, working thoroughly into the canal, and, if possible, to the apex; repeat until effervescence ceases. Dry out cavity and canal. If necessary I repeat this process; in difficult or inaccessible canals, sometimes a third application is made. After the last use of the alkali, wash freely with water and then a germicide (I use electrozone) by means of cotton on the broach. Dry out with cotton, dehydrate with 95 per cent. alcohol, follow freely with hot air and Evan's root dryer, if you have one. Now fill permanently.

In review, let me add this is an exceedingly powerful agent. It should not be applied lavishly. In a molar it need not touch the walls of the cavity or adjoining teeth at all, and in case an anterior tooth is undergoing this treatment, its exterior and the neighboring parts may be protected by chloro-percha varnish after using the acid, neutralizing thoroughly all surrounding parts. Remember it will drop from the broach very easily, and the point of contact with napkin or towel will be visible for days afterwards, unless the hole be mended.





Second District Dental Society.

OCTOBER MEETING.

The October meeting of the Second District Dental Society was attended by an unusually large number of members, many visitors also being present, and from the number of newly added younger members, it was made manifest that the Society is to continue its usefulness in a much enlarged sphere of activity. The essay of the evening, "Compatibility between Tooth-bone and Filling Materials," was read by Dr. F. T. Van Woert, and is presented in full in this issue. The following interesting discussion ensued :

An allusion was made by the essayist to the series
Dr. Brockway. of articles recently published by Prof. Black. I have read the articles, but whilst I have a great respect for Prof. Black, I fear that he is not very practical. He supposes throughout his papers that practically all teeth may be saved by the use of gold. It may be that in his practice he has been able to accomplish this, but in mine I have preserved and made valuable with other materials, teeth, which in my opinion not the Angel Gabriel could have saved with gold. The first object of filling a tooth is to save it, but it is also good common sense to depend upon that filling with which it may be most easily saved.

Whilst listening to the paper I was reminded of a
Dr. Halsey. case which recently passed through my hands. The patient was a very wealthy gentleman residing in New York City. I found several very large cavities in bicuspids, all of which had been filled several years previously with gold. Caries had not recurred, and the fillings were in excellent condition, except that there was evidence of wasting about the margins. It did not seem wise to remove these fillings, which had been and still were doing such good service. It was a nice question to decide upon the best mode of procedure. Finally I followed the margins with a small bur, cutting a groove of sufficient depth, and this groove I filled with amalgam.

In my practice I employ practically the methods described by Dr. Ottolengui in his work, "Methods of Filling Teeth." Consequently I have utilized some of the combinations of materials recommended, and I can heartily commend the use of gutta-percha, followed by cement and topped with amalgam. But I wish especially to speak of a material which seems to have had its day. I know that I have only to mention copper amalgam to arouse a howl of protest; nevertheless for five years it has done excellent service in my hands. In two or three cases especially, where others had failed with the plastics, and also with gold, I used copper amalgam with most satisfactory results.

I wish to commend what the essayist has said about filling with a combination of cement and amalgam. We can avoid all discoloration of the tooth substance by lining the walls with cement, thus interposing it between the amalgam and the walls. To one who has not attempted this method, it may seem very easy, but it is a great mistake to imagine that success will come at a first trial. As with other operations, the best results can only be attained through skill, which comes only with experience. I mention this that those who fail at first may not condemn the method. The most common mistake is the liability to get in too much cement. Dr. Kraemer said to me once: "Take up about as much as you think you need, and then use half of that quantity." I have found that a good maxim to have in mind when taking up the cement. A mere lining is all that is required.

Nine years ago one of my amalgam fillings failed. I found the pulp slightly exposed. I filled the tooth with copper amalgam, and it has saved the tooth. The pulp is still alive. I believe that it was a mistake on the part of the profession to abandon copper amalgam, for I am sure that it accomplished results not attainable with any other material.

I also wish to say a few words in favor of copper amalgam. One of the gentlemen present persuaded me many years ago to try it. I did so and I can show to-day a number of copper amalgam fillings, better than which I do not think could be found made of any filling material. But the anxiety which I have endured from the use of copper amalgam has turned my hair gray. The physician examines a patient, recommends a course of treatment and the patient obeys, and takes the medicine prescribed. I think the dentist should occupy a similar position. He should not ask the patient what material to use, but should fill with whatever his best judgment dictates. I have a patient, a young man of twenty, in whose mouth every tooth contains at least two fillings. I heard a man once say that he filled all teeth with gold. I am not like that man, and freely admit that there are many places where I cannot properly insert gold, and I believe that all honest practitioners will make the

same admission. In the mouth of this young man I used gold for his anterior teeth, and saw him every three months. I removed and replaced those gold fillings several times, and then, in despair, resorted, first, to phosphate, and then to amalgam. Now there is not a gold filling in his mouth, and not a tooth which has not at least two amalgam fillings. His teeth are in thorough order, and he has perfect comfort in mastication. This proves the wisdom of choosing between materials, and that gold is not the only filling, nor always the most reliable.

We hear a great deal about inaccessible cavities and I
Dr. Hill. never hear the words used at a dental meeting but I wonder how those inaccessible cavities are filled. I imagine they are made accessible before the filling is introduced. Dr. Black's papers have been accepted as authoritative by the majority of the best men in the country, yet, in my opinion, it is absolutely impossible to accomplish all that he claims with gold. No amount of argument can disprove the fact that it is impossible to perfectly and solidly pack gold against enamel which is as thin as paper and produce good margins. The enamel will crumble out in time, having been disintegrated by the force necessary to pack the gold. We should remember also, when dealing with frail teeth, having large cavities, that great masses of gold placed in contact with frail enamel walls must result in disaster from the mere effects of expansion caused by extremes of heat and cold. At one moment we drink ice water, bringing the temperature of the teeth and gold fillings down to thirty, and then we deluge the mouth with scalding hot tea, the result being a rapid and unequal rise of temperature, the gold responding and expanding to a greater degree than the enamel. What wonder that the friable enamel cracks, and that in time the margins are found to be imperfect? It would be wonderful if it were otherwise.

Proposed Change in the Law Governing the Practice of Dentistry in the State of California.

Reported by CLYDE PAYNE, D.D.S., San Francisco, Cal.

At its November meeting, the Sacramento Dental Association took the initiative in a movement to devise a new act governing the practice of dentistry in this State. Copies of the proposed change in the law were mailed to the various dental organizations in the State, for their consideration and approval, by a committee appointed from the Sacramento Association. At the suggestion of the Stomatological Club, each organization was requested to

appoint a committee of five to meet in joint caucus with the committees from other organizations, for the purpose of discussing the proposed changes in the law.

This meeting was called for Saturday evening, January 9th, in the rooms of the Stomatological Club, the following gentlemen being present : Drs. W. C. Keith and Wm. Wood, Sacramento Dental Association ; Drs. S. A. Hackett, H. P. Carlton and H. D. Boyes, Oakland Dental Club ; Dr. W. A. Moore, California State Board Dental Examiners ; Drs. T. N. Inglehart and W. F. Lewis, State Dental Association ; Drs. S. E. Knowles, Thomas Maffew, Russell H. Case, J. A. W. Lundberg and W. Z. King, Stomatological Club ; Drs. L. Van Orden, J. D. Hodger, W. A. Knowles and F. L. Platt, San Francisco Dental Association ; Drs. Gilbert F. Graham and G. N. Van Orden, Alumni Association, University of California ; Drs. Chas. Bexton and F. C. Pague, College of Physicians and Surgeons ; Drs. C. L. Goddard and M. J. Sullivan, College of Dentistry, University of California. Dr. S. E. Knowles was elected chairman of the meeting ; Dr. W. Z. King, secretary.

The purpose of the meeting being stated, Dr. Thos. Maffew took the floor to question the right of the assemblage to take any action that would be binding on the profession of the State, or that could be construed as having the indorsement of the organizations represented at this meeting. His point was that the committees present had come simply to discuss the proposed changes, and not for the purpose of framing a new law, or indorsing the draft proposed. In his opinion the various committees must report back to the organizations which they represented, before they could take any action in the matter. The point was ruled to be well taken, and the meeting resolved itself into a meeting of the committee of the whole.

The proposed draft was then discussed in sections, and the chair appointed Drs. W. C. Keith, Wm. Wood, Russell H. Case, C. L. Goddard and Thos. Maffew a committee, with instructions to send to every practitioner in the State a copy of the proposed law as amended, together with a copy of the present law, and request each one to send his views to the committee within ten days.

Dr. Maffew declined to serve on this committee, but no one was appointed in his stead.

The principal features in the proposed law, as amended, are :

FIRST.—To take the appointments of the members of the State Board of Examiners out of politics, virtually placing it in the hands of the State Dental Association.

The clause in Section II. reads as follows :

“The members of said Board shall be appointed by the Governor of this State from a list of ten dentists proposed by the California State Dental Association.”

The other feature is the remodelling of Section V. of the present law, including therein that section from the New Jersey State Law which provides: "That any person desiring to study dentistry in the State, with any duly authorized dentist, for the purpose of presenting himself or herself for examination and license as a practitioner of dentistry in the State, at the expiration of his term of study, shall cause the name of his or her preceptor to be registered with such Board. His or her term of study shall be three years and shall commence and date only from such registration."

Stomatological Club of San Francisco.

Reported by CLYDE PAYNE, D.D.S., San Francisco Cal.

The regular weekly meeting of the Stomatological Club was held on Tuesday evening, January 5th, 1897. President Dr. Wm. J. Younger in the chair.

Routine business being disposed of, the discussion of Dr. Wm. J. Younger's clinic of December 29th, 1896, was taken up.

Tuesday, December 29th, 1896.

Clinician, Dr. Wm. J. Younger.

Operation: A—Treatment of pyorrhœa alveolaris.

B—Artistic treatment of the natural teeth.

C—Use of silk ligatures for regulating.

Dr. Younger. In the first place, the removal of the incisive surface of enamel, which has been and still is considered by the profession as highly injurious to the teeth, is, on the contrary, when skillfully and artistically done, of great benefit to these organs, for we find in adult life that this surface is the portion of the enamel which has impressed upon it the erosive action of all the medicines that have been taken in diphtheria, sore throat, scarlet fever, measles, and other troubles which attack the majority of human creatures during childhood. This surface consequently is not normal enamel, but a disintegrated layer which retains the acid secretions and the decomposing particles of food which cause further disintegration and subsequent decay.

The next point in my clinic was the treatment of pyorrhœa. After the tooth is cleaned of tartar, a strong antiseptic should be used, and, by the by, it should be used before operating. Year before last I was laid up for three weeks, and last year one week, by being inoculated by my instruments with the infection. That shows the toxic nature of pyorrhœa tartar. Lactic acid is used, because it has the effect of denuding the surface of

**Toxic
Effects from
Pyorrhœa.**

the pocket. After the tartar has caused the separation of the root from the surrounding tissue, it is lined with a mucous surface. It also seems to cleanse the root and remove the cicatricial tissue from the mouths of the mute openings of canaliculi, and in that way stimulates a proliferation of connecting tissue from the root itself. If there be any slight necrosis of the alveolus, it will remove that, but it will not dissolve tartar, though. it seems to have the effect of weakening the attachment of tartar to the root.

The tartar irritates the surrounding tissue and pus is thrown out to get rid of the tooth, the same as occurs when a splinter or foreign substance enters any other tissue. Pus, instead of washing away tartar as is supposed, actually causes an accumulation of tartar.

The next point in the clinic was the treatment of an elongated central by silk ligatures, and another point was the turning of a lateral and bringing it into the line of the arch, also by silk ligatures. The teeth of the young, which present a perfect arch in youth, are often found in later years with the arch broken and either one central lapping over the other, or the two laterals turned and lapping over the centrals. There seems to be a force at work in the jaws which perpetually pushes the teeth forward. The molars and bicuspidis do not get out of position because of their broad surfaces and the force being more direct, but the teeth forming the arch, and especially the incisors, are more easily dislodged. Biting a hard fragment, such as a piece of bone or crust of bread, will often cause a displacement, which causes the tooth so displaced, no matter how trifling it may be at first, to be urged forward by this *vis-a-tergo*, or force from behind. Therefore, as soon as the slightest irregularity in the position of the cuspidis or incisors is observed, the teeth should be restored, and kept in their position.

In regard to trimming the approximal surface of teeth, when Dr. Younger first demonstrated the treatment three or four years ago, I was skeptical. Following it out in a case I had, I trimmed the central and lateral very closely, and fancied I had removed all the enamel, and I was fearful of decay. I was aiming to bring an overlapping lateral into position. For six months the teeth were very sensitive, and a cold draft was painful, and if a ligature were passed between the teeth, it would cause pain. I watched those teeth closely; all sensitiveness disappeared, the teeth were smooth and polished, with no sign of decay, and I have since followed out this treatment at every opportunity.

In regard to polishing the surface of enamel, especially of incisors; I thought the patient to-day presented a remarkable set of teeth for his age. The surface of enamel seemed perfect and I wondered, whether at that age, it is advisable to try to beautify the teeth. Where there is any imperfection or stain, I approve of it.

**Regulating
Teeth with
Ligatures.**

Dr. F. C. Pague.

Dr. Merriman, Jr.

If there are no corrugations no stains, and the teeth
Dr. W. J. Younger. are artistically shaped, let them alone. I suppose that I have schooled myself to see defects which the majority do not see.

In regard to the teeth cut down by Dr. Pague, which
Dr. Millberry. were sensitive for six months, isn't it possible that the pulp is affected and will die? Did the Doctor treat the tooth during its sensitiveness?

No. I left it to nature. I was pleased to see all
Dr. F. C. Pague. sensitiveness disappearing after six months, and cold air did not cause pain. Later the sensitiveness disappeared entirely.

When teeth have been ground so much, have you ever
Dr. F. K. Eedyard. tried caustic? I have used nitric acid in diluted form for sensitiveness.

The best I have found is granulated chloride of zinc.
Dr. W. J. Younger. Let it dissolve by the moisture of the breath, and that cauterizes the animal tissue without causing discoloration.
 Be sure to protect the gum. We can all cultivate artistic sense. Be sure you have it and the judgment to guide your hand. You find people with fish mouths—teeth depressed and the lowers stand out. By reduction of the approximal surface of the teeth, you can create a space that is quite enough to enable you to pull the teeth back and then get them in proper position. A lady in Chicago came to me with a fish mouth. Her tongue wobbled about and it annoyed her. Another young lady of eighteen had an unhappy expression. I idealized the mouth at once. The corners of the lip drooped—the unhappiness conveyed remained even when she smiled. By means of delicate ligatures, I drew the two centrals down and the outer cusps being very large, I cut them off. Her friends asked her what I had done, the change was so great. So you find by the position of the teeth, you can beautify and give the appearance of health to your patient.





Theory versus Practice.

The case under discussion this month (Fig. 1) belongs to that most interesting class, where prognathism is to be overcome. These cases are especially appropriate for theoretical discussion, because, while a series of models, taken from various mouths, all bear striking resemblance the one to the other, each case will be found to have an individuality of its own, necessitating some departure from the methods of procedure in previous cases. Thus the expressions of opinion arising from experience with apparently similar cases, are both interesting and instructive in juxtaposition with Dr. Jarvie's description of what he succeeded in accomplishing.

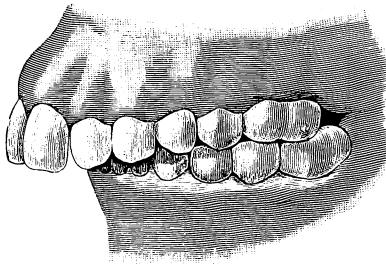


FIG. 1.

The patient was a boy of thirteen, slight in build, of delicate physique, receding chin, and prominent upper lip. In fact the lower lip rested inside of the upper teeth. He lived in proximity to the doctor's office and consequently could be seen as often as requisite. His physique and nervous temperament were such as to suggest the need of careful procedure, so that no undue strain might be put upon him.

**Dr. Geran
Suggests
a Method.**

In Dr. Jarvie's case, I would extract the first superior bicuspids, and then strike up gold or German silver caps, to fit accurately the sixth year molars and second bicuspids. Then, in order not to allow these teeth to slide forward from tension, I would make a similar cap to fit the cuspids,

with hooks or lugs on each, to first draw the cuspids backwards. With the cuspids in their proper place, I would then extend my rubber tubing to the superior laterals, drawing them into position. I would then put the tension over the two superior incisors, by making a gold band over the labial surfaces, with lugs extending over the cutting edges, to keep it from slipping up, with hooks on each end of said band to catch the the rubber tubing. When using this last device, if I found there was too much strain on the first molar and bicuspid, I would pull the centrals back singly.

The first thought to the inexperienced would be that the inferior incisors would still occlude with the gum on the palatal surface. My experience in similar cases teaches me that in retracting the six front teeth the teeth are shortened or pushed upward, and when the case is completed, the inferior incisors will strike properly on the palatal surfaces of the front teeth. I am inclined to think that I would not do anything with the inferior incisors until after the eruption of the twelfth year molars; then it may or may not be necessary to push the incisors out.

DR. J. P. GERAN, Brooklyn, N. Y.

**Dr. Guilford's
Diagnosis and
Treatment.**

The case submitted is one of a type commonly met. I doubt the expediency of undertaking so difficult a case as this at thirteen years of age with several of the teeth in the lower jaw still unerupted; nevertheless, we will consider it.

On examination we notice first the deep overbite and the close approach of the lower incisors to the soft tissue of the upper jaw, and second, the fact that the occlusion of the lower teeth with the upper (at the sides) is exactly one tooth back of where it should be. These two conditions determine the line of procedure.

First, we must open the bite so as to enable the upper and lower incisors to approach each other in the movement to be undertaken. The opening of the bite can usually be best accomplished by the wearing of a plain vulcanite plate, covering the roof of the mouth, with a slightly raised surface in front, to receive the occlusion of the lower incisors. When in place, only the lower incisors come in contact with it, the other teeth, as a consequence, failing to occlude.

The appliance serves a double purpose; first, the lower incisors, being compelled to bear the brunt of mastication, are by their extra use forced somewhat back into their alveoli and thus shortened, while the bicuspids and molars gradually elongate from lack of occlusion. The plate should be worn for from six months to a year to produce satisfactory results. With the bite opened, the next consideration is that of bringing the anterior teeth (both upper and lower) into a more correct relation with one another. This may be done

by moving the superior incisors inward, the lower ones outward, or by a combination of the two movements. Which method to pursue in any given case must be decided by the condition present.

I should favor "jumping the bite" with the lower jaw, so as to bring it forward into its normal position. This can be done by constructing a vulcanite plate for the roof of the mouth with an elevated angular ridge upon it at such a point as to cause the lower incisors to just strike the anterior incline of the ridge in occluding. Constant biting upon this slope will cause the lower jaw to slide forward at each closure of the mouth and in the course of about a year will probably bring about the desired change in occlusion.

If after this is done it becomes evident that the patient's appearance would be improved by slightly retracting the superior incisors it can very readily be done by the vulcanite plate and piano-wire springs as shown in Fig. 2.

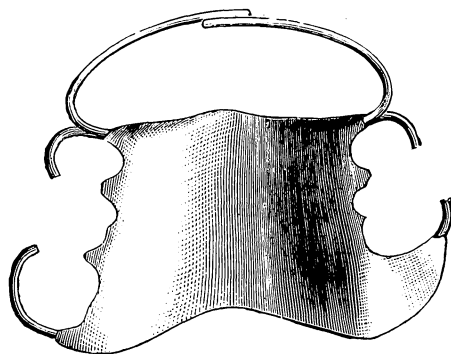


FIG. 2.

The treatment I have outlined would necessarily be slow, but it would have the advantage of being painless and not taxing the nervous or physical energy of a delicate growing child.

S. H. GUILFORD, D.D.S., Philadelphia, Pa.

In the case now under consideration, inasmuch as the lower teeth occlude posteriorly to their usual position and as Dr. Jarvie describes the patient as having a receding chin, a photograph of the face in profile would enable one to judge whether the superior protrusion was due to abnormal development of the superior maxilla and alveolar ridge, or to lack of development of the inferior maxilla, being thus apparent rather than real.

The lower teeth occlude with the upper, back of the normal position, a distance equal to the width of a bicuspid. Let us consider the case separately under two propositions.

**Dr. Stoddard
Offers Two
Propositions.**

Proposition I. If the deformity is due principally to the lower jaw, I would first try to jump the bite and force the lower jaw forward with a plate in the upper arch, having an inclined plane posterior to the superior incisors on which the inferior incisors could occlude, as shown by Dr. Kingsley in "Oral Deformities." (Fig. 3.)

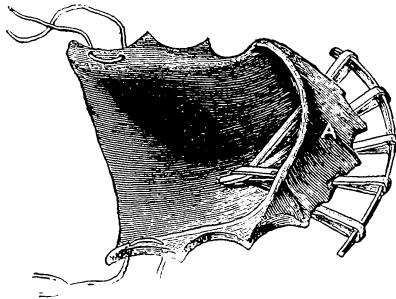


FIG. 3.

The superior incisors could be drawn slightly backward then, by rubber bands attached to the plate, as shown in the cut.

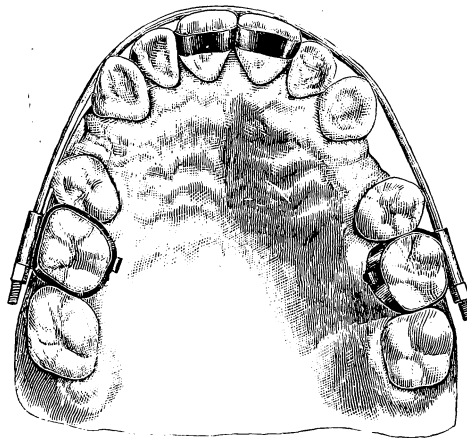


FIG. 4.

A more effective appliance would consist of metal crowns for superior molars with lugs projecting down behind the inferior molars, so that the teeth could not be occluded without throwing the lower jaw forward.

To the buccal surfaces of these crowns I would solder tubes for the insertion of the screw cut ends of a labial bow, the anterior part of which would rest in notches cut in bands cemented to the superior central incisors. By means of nuts behind the tubes, force could be brought on the superior incisors to reduce slightly their protrusion, and close the space between the cen-

trals. This bow should be of stiff gold wire, and wider than the arch, so that the superior bicuspid could be moved buccally by means of rubber bands or ligatures. This bow would bind the superior teeth together so that the strain put on the lugs in jumping the bite would be borne by all the teeth instead of by the molars alone.



FIG. 5.

Proposition II. If the profile of the face indicated that the deformity could be corrected by operating upon the superior arch alone, I would extract the superior first bicuspid and cement on the first molars broad bands with buccal tubes, in which I would insert a labial bow, as described above, and shown in Fig. 4.



FIG. 6.

Behind these tubes I would apply nuts for tightening the bow. These would be merely for retention, as, in the majority of such cases, the first molar and second bicuspid on each side—four teeth only—would not afford sufficient anchorage for moving the six anterior teeth.

For moving the anterior teeth, and thus reducing the protrusions, I would use the cap and bit shown in Figs. 5 and 6. The vulcanite bit should be made on a cast formed in an impression taken with the bow in place, so as to fit over it, and should not be allowed to project between the central incisors. The cap and bit could be worn at night only, or at such times as the

patient is not in school or at meals. The nuts on the ends of the bow should be tightened every morning just enough to take up the slack caused by the movement of the anterior teeth during the night. The rubber cord from the cap to the bit should be so applied as to draw upward as well as backward and force the superior teeth somewhat into their sockets (see Kingley, p. 134, f. 66). This is to prevent the inferior incisors impinging on the lingual sur-

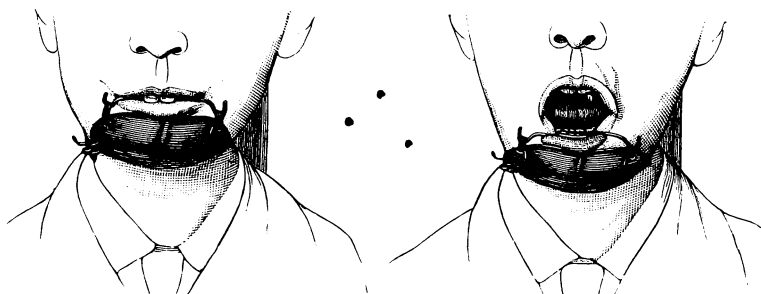


FIG. 7.

face of the superior as they move back. If reduction of the length of the superior incisor is not desirable, the inferior might perhaps be forced into their sockets by a bit and chin piece as shown in Fig. 7, or the bit might

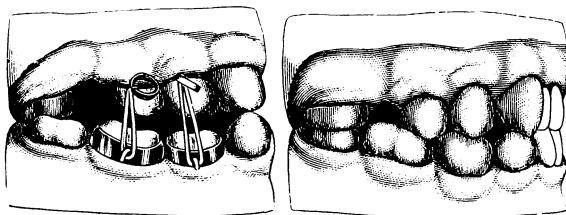


FIG. 8.

FIG. 9.

be opened by means of gold crowns on the inferior molars; the bicuspid could then be forcibly erupted by rubber bands extending to the superior teeth as shown in Figs. 8 and 9.

C. L. GODDARD, D.D.S., San Francisco, Cal.

**Dr. Kells
Explains
His Views.**

The case presented is of a lad who, while thirteen years of age, has not yet erupted the full complement of teeth, actually due a year previous, and is altogether a very interesting form of irregularity on account of the very marked improvement in the appearance of the patient which should naturally be expected to be obtained.

The extraction of the remaining temporary molar would be the first step in the treatment of the case, and nothing further would be done until the lower cuspids and bicusps were fully erupted, when we would find his teeth in the condition represented by the non-articulated casts, Fig. 10. At this period we should also find his general health improved, owing to the instruction as regards study, exercise, rest and diet, which he had received from us at the period of his first introduction ; and so, in proper condition to undertake the correction of the irregularity, which is so marked as to practically amount to a disfigurement.

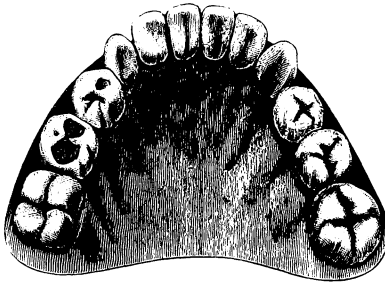


FIG. 10.

When the little patient closes his teeth normally (at present) we find that the lower ones articulate just one tooth too far back, and if we have him bring his teeth together, so that the lower laterals close up against the upper ones,

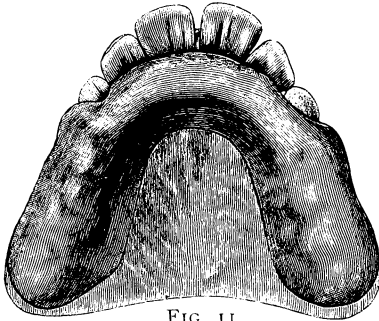


FIG. 11.

we find that the mal-articulation of the back teeth is not only about corrected, but that his profile is so greatly improved as to be nearly satisfactory.

This discloses the cause of his trouble to be almost entirely in the receded pose of the lower jaw, and not due to the protrusion of the upper incisors, as one might first be led to suppose.

Having therefore discovered the cause of the patient's disfigurement, for that is what it practically is, we next proceed to correct the trouble as follows :

A vulcanite plate, as shown upon the model in Fig. 11, is made and articulated in such a manner that there is a constant tendency of the lower jaw to

slip forward, while at the same time it will only articulate with the lower bicuspids and molars, *when they are in the forward position*, while with the *usual bite* nothing but the incisors touch the plate.

Now, in masticating, it is impossible to triturate the food unless the jaw is brought forward, and, in consequence, it is so brought, the result being that before very long the bite as shown in articulated models, Fig. 12, will have become natural.

At this stage we insert two regular "Coffin" plates (so well known as to need no model or description) and with them proceed to spread both arches, care being taken to spread both sides equally.

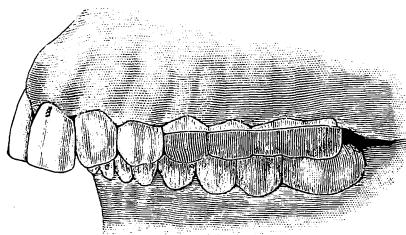


FIG. 12.

At the conclusion of that step we make a retaining plate for the upper arch, carrying a gold wire around the front of the incisors from cuspid to

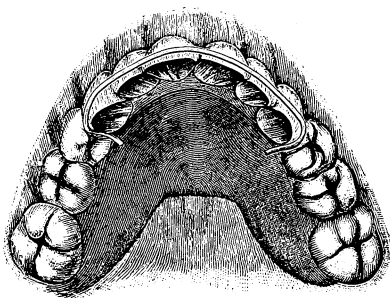


FIG. 13.

cuspid, by the bending of which we gradually push back the centrals and "line up" the six front teeth. (Fig. 13.)

This plate is practically a fac-simile of the plate to be worn as a retaining plate, model of which is shown and which is cut away behind the incisors, which is always advisable when possible.

The lower retaining plate should be cut away slightly from behind the incisors, that during the process of aligning the upper ones any slight (and there is some little change necessary) change of their position may take place, and it will do so from the pressure of the articulating teeth.

Fig. 14 shows the case as completed and the upper retaining plate, which should be worn fully one year. After its removal the teeth should be carefully watched from week to week, to assure ourselves that they will not move. Should there be any movement the retaining plate should be at once replaced and worn for another six months, and so on.

A lower retaining plate might or might not be necessary after the completion of the alignment of the front teeth.

During the process of regulation an exceptionally strict watch should have been kept over the teeth, as they are always much more liable to decay while covered with appliances, and as often as found necessary they should

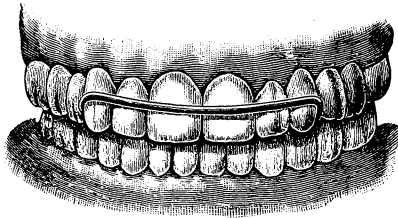


FIG. 14.

have been thoroughly cleaned and highly polished. The constant use of lime water as a mouth wash at least three times per day should have been insisted upon.

C. EDMUND KELLS, JR., D.D.S. New Orleans, La.

P. S. Strictly confidential. This is a typical case in which it is decidedly easier to explain to others how readily the desired result can be obtained than to execute it one's self.

**Opinions of
Dr. Rhein
and Andrews.** The description of the case makes it difficult for us to determine whether the correction of the malformation should be actively undertaken at the time represented by the cast sent, or whether the eruption of the second molars should be awaited. Dentition has already been materially delayed, and the fact that the boy's physical and nervous systems were impaired, necessitates an examination of the patient himself to satisfactorily decide. Consequently we present two opinions.

If the physical and nervous systems were at as low an ebb as the appearance of the models might indicate, we would extract the inferior left deciduous molar, and await the eruption of the second permanent molars.

[Dr. Kells, with much ingenuity and skill, constructed models of the mouth in progress of his theoretical regulation which are shown in the engravings.—Editor.]

During the interval the boy would be brought into a more favorable physical condition. He would be kept under as close observation as though a regulating apparatus were in position. He would be shown how to keep his mouth and teeth clean ; this instruction would be most thoroughly pursued by constant cross-examination, in order to arrive at the greatest antiseptic care possible.

The second molars having erupted, the course of procedure would be carried out mainly on the same lines as though active operations were commenced at once. Consequently, we will now begin with the assumption that the boy's physical condition is strong enough to warrant immediate intervention.

At the same sitting at which the deciduous molar is extracted, the lessons in mouth cleansing should be commenced, every vestige of scum or deposit having been removed and the surfaces of the teeth thoroughly polished.

Careful inspection of the models shows that the protrusion has a double cause. The inferior teeth are prevented from occluding forward in their proper position, because the incisive palatine surface of the superior maxilla acts as a wall, beyond which the superior incisors cannot proceed, and consequently the posterior inferior teeth occlude one half the width of a tooth too far back. The cause of the trouble would first be obliterated before bringing any pressure to bear upon the superior incisors.

For this purpose, a split vulcanite plate for the superior maxilla would be constructed, extending from the posterior teeth to the cuspids, and by means of a jack-screw, this portion of the arch slightly widened. In the anterior part of the plate, extending across the arch from cuspid to cuspid, would be a heavy piece of plate with such a pitch as to exert constant pressure on the occlusal surfaces of the inferior incisors.

As soon as the distance separating the posterior teeth was slightly increased, this plate would be replaced with one sufficiently stiff to hold the teeth in their new position, with a striking plate that would enable the patient to jump the bite. (Kingsley, *Dental Cosmos*, vol. xxxiv, page 359.)

The superior incisors and incisive process would now be forced back sufficiently to close all gaps between the teeth. This would be accomplished by attaching to the biting plate an apparatus encircling the buccal and labial surfaces of the superior teeth. A heavy wire with hooks attached to the occlusal edges of the incisors to prevent their elongation would pass into tubes attached firmly in position, corresponding to the buccal surfaces of the bicuspids and molars. By means of screws and nuts, or ligatures if preferred, whatever distance was gained at night, would be held during the daytime, giving an opportunity in this way for a certain amount of recuperation. At night there would be attached into a slot made in the wire at the median line a heavy bar extending outside of the mouth, and this strapped to the skull cap as illustrated by Dr. Kingsley in the article above quoted.

Not the least important problem of the case will be the choice of a proper retaining fixture which may need to be worn for some years.

By this time the new bite should be so thoroughly assumed that the plate can be dispensed with. It is essential that the wire, curved to fit the outer contour of the anterior teeth, should be removed often enough during the day to admit of the most careful cleansing of the teeth. A retaining plate to be worn for so long a time would be too irritating and unhygienic, and would consequently not be used. The retaining fixture would consist of three separable pieces, which, when in position, would be virtually one fixture. On both sides gold bands would be carefully fitted around the first molars. On the buccal side of the bands would be soldered tubes with slots posteriorly. A round 18k. gold wire would be carefully fitted to conform to the labial surfaces of the anterior teeth. The ends of this wire would pass into the tubes attached to the molars, prevented by posts on the wire itself from entering beyond a given point. From these posts there would extend back two springs of clasp metal, which would catch into the slots in the posterior ends of the tubes, and thus securely lock the retaining wire into position, although it could be removed from the teeth as readily as a necklace is unclashed.

M. L. RHEIN, M.D., D.D.S., and C. L. ANDREWS, D.D.S., New York.

**What
Dr. Jarvie
Accomplished.**

This case was commenced by making an apparatus after the Jackson method. It consisted of a crib of piano wire upon both sides of the upper jaw, which embraced the two bicuspid and molars as supports.

These cribs were connected with a wire passing in front of, and in close contact with, the incisor teeth. Instead of being in a straight line from bicuspid to bicuspid, the connecting wire was bent, between the cuspids and first bicuspid, in the form of an inverted letter U, and to this connecting wire was soldered hooks which turned over and rested against the cutting edges of the four incisors, Fig. 15.

This apparatus was inserted about December 1st, 1893, and the movement of the teeth was induced by bending towards each other the sides of the loops, two or three times each week, thus forcing the incisors inwards, while the hooks over the cutting edges prevented the elongation of the teeth. The incisor teeth were in proper position by April 1st, 1894, when the arch was widened by straightening somewhat the supporting wire across the roof of the mouth.

May 1st, 1894, a retaining crib of gold and platinum wire was made, passing in front of the incisor teeth with hooks attached and arranged as in the regulating apparatus.

November 15th, 1894, an apparatus was inserted in the lower jaw similar

to the one made for the upper, a strong supporting wire passing behind and near to the incisors. A little straightening of this wire caused the spreading of the lower arch. From the crib on either side was a small connecting wire passing in front of and in close contact to the incisors. To this was attached hooks, one resting upon the cutting edge of each of the four incisors. These hooks were bent two or three times each week, and thus these teeth were forced into their sockets, making them shorter and relieving their occlusion upon the lingual surface of the upper teeth.

March 1st, 1895, the position of the teeth being as shown in Fig. 16, a retaining plate was inserted similar to that made for the upper jaw.

If I had written this report at the time the retaining plates were inserted, I could truthfully have said that the result had been a great success, but, as we sometimes learn as much from unfortunate terminations as we do from successes, I will report the sequel.

March 1st, 1895, everything indicated a permanent and happy result of this case. The lad, though delicate and of nervous temperament, had im-

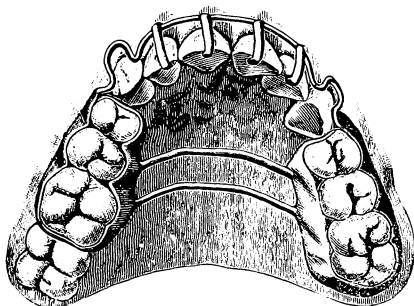


FIG. 15.

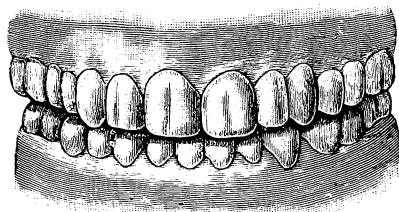


FIG. 16.

proved in physique during the operation and he had regular teeth and a greatly improved physiognomy. But in the following autumn there was the commencement of decay in many of his teeth. In spite of all my care and the care customarily given by a boy of thirteen, cavity after cavity developed. The presence of the retaining plates, which were supposed to be removed several times each day for cleaning, seemed to accelerate decomposition and fermentation, and in the Spring of 1896 decay progressed so rapidly and cavities became so numerous that although I realized the retaining plates should be worn longer, I determined that unless the conditions were made more favorable decay would destroy all the teeth, and it would be wiser to remove all the plates and take whatever chances there might be for a return to the original positions of the teeth. The sanitary position of the mouth is much improved, but the teeth have partially resumed their old position. The regulating was in charge of my associate, Dr. W. J. Turner.

WM. JARVIE, M.D.S., Brooklyn, N. Y.



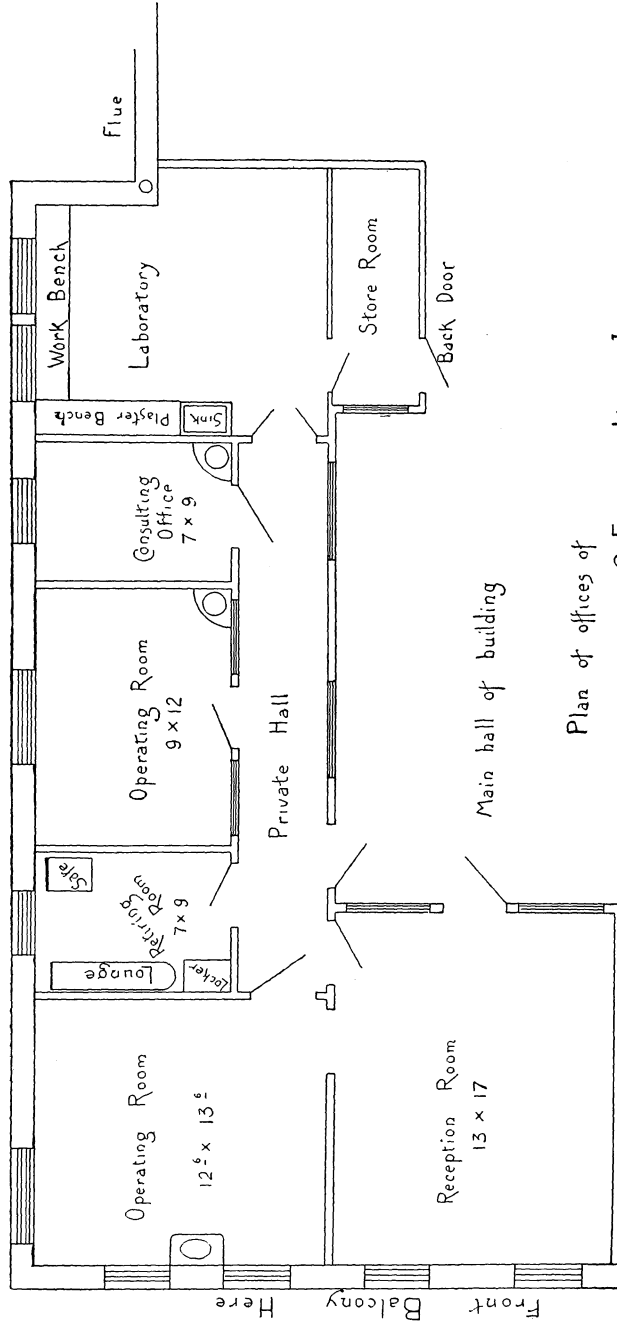
Office of Dr. C. Edmund Kells.

In our last issue, it was intended in connection with the description of the office of Dr. Kells, to publish a diagram of the floor plan. Unfortunately, at the last minute, the cut could not be found and it was thus unavoidably omitted. This has proven to have been a fortunate circumstance, for through this we have been enabled to discover that this department will have that useful influence and practical value which was intended. In the text of the article allusion was made to this floor plan, with the result that about fifty letters have been received, some by us and some by Dr. Kells, asking for this floor plan, the point of interest being in the statement of Dr. Kells that by engaging a suite in a building during its construction, he had been enabled to have his offices divided according to his own wishes, and the dentists who have communicated with us are desirous of taking advantage of this suggestion. For this reason the floor plan is published herewith.

A Practical Dental Cabinet.

In organizing this department, I have not intended to add a purely ornamental feature to this magazine, but rather to publish a series of articles, which might tend towards the development of a perfect equipment of office and laboratory. I had heard of the handsome offices of several of our prominent men, and I communicated with these gentlemen, endeavoring to outline my wishes. Dr. Kells grasped my idea, and, I think, gave us a very readable and instructive description of his establishment; but several others have not so readily comprehended me, and two or three have suggested that I should myself write a description of my own office, which might serve as an example of the style of contributions solicited. This explanation is given as an excuse for intruding myself, so early, into this department.

In almost any city in this country, with the exception of New York, it is permissible to have one's offices in an apartment-house, or office building, as advised by Dr. Kells. In the metropolis, it would be a most hazardous ex-

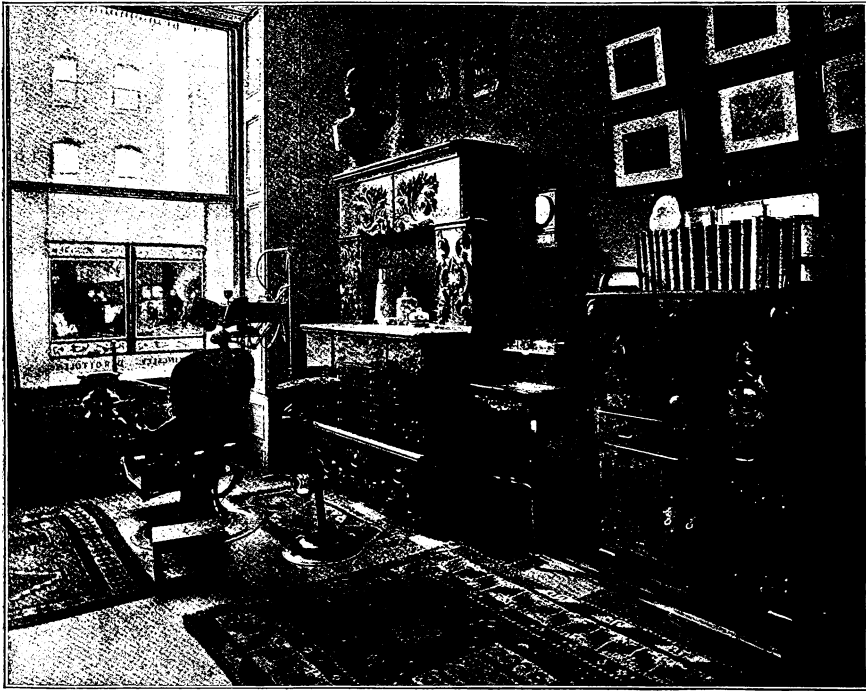


Plan of offices of
 C. EDMUND KELLS Jr.
 North-West Corner of Building
 5th Floor
 New Orleans.

Scale 1/4" = 1 Foot

periment. The dentist who is ambitious of attracting the better classes must locate in a private residence, on a private street. This renders it exceptionally difficult to find quarters exactly suited to one's needs, and I may consider myself unusually fortunate, for, being near the corner of a cross street, the light reaches the operating chair from the northwest, with only slight obstruction from the buildings opposite.

The first feature to which I would call attention, and which is well shown in the photograph, is the arrangement of the window. Opening as it does upon the street, which is but a few feet below, it becomes necessary to screen



the lower sash from the curiosity of the gaping crowd which pass the house. Lace curtains proved unsatisfactory, though endured for a long time. At least two sets were required, in order that they might always be clean, and this constant removal was an annoyance. In summer, when the heat rendered it compulsory to have the sash raised for ventilation, the curtains were a poor screen, because usually flapping up, and occasionally a stronger gust would carry them into the flame of the annealing lamp, rendering a new set of curtains advisable. At present the sash is draped at the sides with narrow curtains, run on two rods, and between these hang beautiful stained-glass

transparencies, representing two incidents in the somewhat picturesque career of Shakespeare's famous Falstaff. These effectually serve the purpose of screens, avoid all necessity of renewal, and offer a restful attraction to the eyes of the patient, which is no small gain.

But the main feature of my office is my cabinet. A general view of it is given in the first illustration, in which it is seen to add somewhat to the embellishment of the office, a feature not to be claimed for any cabinet which I



have ever seen at a dental depot. I believe that I have the handsomest, most useful, and most convenient cabinet which I have seen, yet the cost was very reasonable, when compared with what is offered by the dealers. The most complete cabinet known to me, which is on sale, costs one hundred and twenty-five dollars, and I am within the realm of good taste when I say that it is simply hideous, considered as a piece of furniture. It is of walnut, has a roll top which when down hides the medicine bottles resting on a marble

slab; there are two sets of small drawers, another marble slab, and two closets below. The whole is uncouth in appearance, and would disfigure any office in which there was any pretense of decorative furnishing.

In one of our regular furniture stores I found a sideboard, having closets at the top, supported on two handsomely carved pedestals. In converting the sideboard into a dental cabinet a medicine closet was placed at each end, instead of the pedestals, from which latter the carved ornaments were removed and applied upon the closet doors. The customary three large drawers of the sideboard were taken away and replaced with eight drawers of increasing depth, the shallower ones at the top for small instruments, and the others for various appliances, as most convenient. An oak slat was made to fit into a slot at one end and, having a lock at the other, when in position locks all the drawers with one turn of the key.

The side closets were altered only by the addition of a single shelf in each, and serve nicely for the office linen, the chair covers, and other objects too large for the drawers, one of which, though dead, speaks for himself in the second picture.

The lower drawer originally extended the full length of the cabinet. This was unwieldy and useless. It was cut into three parts, the carving along the bottom lending itself very well to my design. In these three drawers are deposited many things of little value, which I have not the courage to destroy at once; as, for example, reprints of wordy dental theses; unarticulated models of irregularities, sent by dentists seeking advice which they deem of too little value to send stamp for reply; and other things of a similar nature, all of which are cleared out once a year.

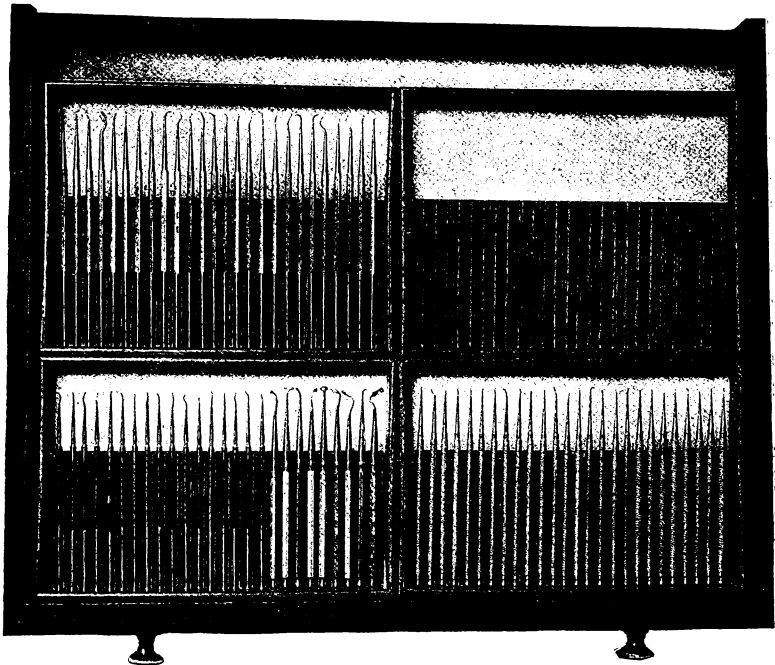
The upper closets are supplied with shelves just wide enough for models, extending around three sides, thus leaving the bottoms free for the deposit of larger objects. Here are kept the models of regulating cases, either in progress, or recently completed. Being in orderly array, they are readily found when wanted.

The top of the lower half of the cabinet is covered with olive green leather, as is also the swinging bracket. After trying many other materials, I am satisfied that for every-day work leather will endure more hard wear, and show less signs of it, than anything else. It may be well to explain how this leather is put on. The edge of the board, about half an inch in width, was cut off with a fine saw passed completely around the front and two sides, thus being removed in one piece. After the leather had been stretched into position, this edge was replaced and fastened with nails, making a perfect finish.

Now let me explain the convenience of this cabinet. Whether I am sitting or standing at the chair, I have just at hand all the instruments or medicaments which I can possibly require, and all in order, ready for use. The top of the cabinet is practically a work bench. In the top drawer I have a

complete set of laboratory tools, all nickel-plated where possible, and without leaving my chair I can do many things, including soldering, which ordinarily carries an operator to his laboratory. In the next three drawers are my operating instruments arranged in trays of my own devising.

A sample drawer is shown in the third illustration, in which are seen four trays, one of which contains no instruments, that I might better explain its construction. Instead of using velvet as is commonly done, these trays are unlined, but are made of oak highly polished. There is a single piece of wood in which are the grooves for the instruments, and extended around this are the



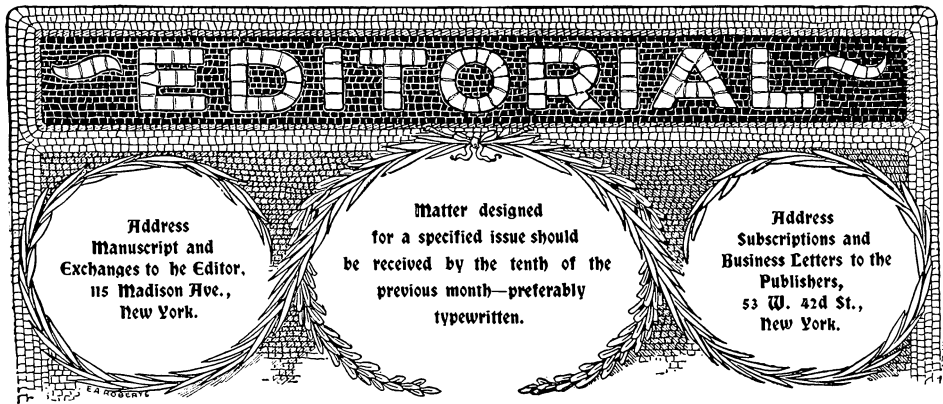
four sides of the tray, *but there is no bottom*, the reason for which is that by this means the trays are easily kept clean, there being no corners in which dust may stray, and I may say stay, for who ever saw a truly clean corner, anywhere? The drawers are lined with large sheets of pink blotting paper, the color not being obligatory, and adding nothing to the hygiene. This blotting paper looks clean and tidy, when fresh, and costing but a few cents a sheet, can be renewed frequently. When dust gets in, the trays, being bottomless, can be removed with the instruments, leaving the dust resting upon the blotting paper, which can be brushed clean.

In the illustration both rows of trays have the instruments with their points in the same direction. This was necessary in order to photograph the drawer, but in use the two upper trays are reversed, so that when the drawer is only partly open, the points of the upper row of instruments show, and the selection can be easily made.

To one who like myself prefers to work without an assistant, the knowledge that though tied to the chair by the exigencies of some precarious situation, it is possible to turn partly around, open a drawer and have the instrument needed to extricate one from the dilemma, not only at hand, but in its own groove, and in plain view, without overturning half a hundred others, is a boon which is worth ten times the cost of my cabinet, which, by the way, I have not given. The side board originally cost eighty-five dollars, and I paid forty for converting it, half of which, however, was exacted for re-staining the oak, to make it "antique." Thus, curiously enough, my handsome cabinet cost me exactly what is asked for the aforementioned monstrosity.

I should not close without mentioning Sannet Oil. This is a cleansing oil, highly volatile, which, used once or twice a week on wood, leather, and hard wood floor, keeps the office like a new pin, bright and ready for business.





An Epoch in Dentistry.

Let the chroniclers of dental progress record January 12th as the most conspicuous date of the century in the history of dental science. Upon that day occurred the most important meeting ever held by the Odontological Society of New York, and perhaps the most important meeting in the annals of the profession. About three hundred and fifty dentists, at least one hundred of whom had come from distant cities, filled the large auditorium in the Medical Society Building, to hear a paper by Dr. J. Leon Williams upon the subject of the minute anatomy of enamel.

The meeting assembled promptly at eight o'clock, and the dentists present listened with rapt attention for two hours to the essayist's disquisition. This fact alone might be considered a triumph. Science is said to be dry, uninteresting, except to hobbyists and bookworms. It is claimed that the "practical dentist" has no time for, and takes no interest in, statistical, anatomical, chemical or microscopical deductions. Yet the room was filled with men who are widely known as practical experts, there being not more than half a dozen present who could be considered as specifically engaged in scientific investigations, as the word scientific is commonly applied. Nevertheless, as has been noted, the essayist received attention such as has rarely been accorded to any one addressing a dental gathering. This is one source of gratulation: the practical men have finally come to understand that their work must depend upon a knowledge of the tissues upon which they build their mechanical additions, if they would escape the charge of empiricism.

But the great importance of the occasion, that which makes it an epoch, from which an entirely new volume of the history of dentistry may, and in fact must, be dated, is that one of the chief problems of dental science was shown to have been finally elucidated. Through the indefatigable, insistent and uncommonly skillful work of Dr. Williams, the cause of dental caries is now known definitely. True, his deductions are the same as those of that other great worker, Prof. Miller, but this does not detract from their importance. Prof. Miller gave us a plausible and probable theory. Dr. Williams has proven that theory to be a positive fact. That Miller's work was not final is proven, first, by the fact that it has been many times disputed, and by the second fact that it has come to be known as "Miller's theory." Through the successful efforts of Williams, Miller's theory will no more be known as a theory, for the bacterial origin of decay has been conclusively demonstrated. The electro-chemic theory must now be abandoned, unless its advocates can show some connection between their theories and Williams's facts. The gentlemen who have written wisely of free acid generated in the mouth, which has the power of producing caries, must revise their arguments.

<p>The True Cause of Dental Caries.</p>	<p>In the first part of his lecture which was illustrated with the finest lantern projections ever shown by a microscopist in this city, Dr. Williams convincingly demonstrated that human enamel is composed of a series of globular bodies, superimposed the one upon the other, these bodies and the rods themselves being held together by what may be termed a cement substance. Later he undertook to show the cause and progress of caries. In this he succeeded, because with deft skill he has found a means of grinding teeth under water, producing sections half as thick as the paper upon which this is printed, without disturbing the attachment of the micro-organisms which lie upon the enamel, and upon all surfaces of the cavity of decay. The principle of dental caries, as demonstrated by Williams, tersely put, is as follows: First, there appears imposed upon, and firmly attached to the non-carious surface of enamel, a felt like stratum of micro-organisms. Second, these micro-organisms excrete a virulent acid, which has the chemical power of dissolving the cement substance, which normally binds together the enamel rods, and their component parts, the globular bodies. Third, this acid dissolution primarily follows the spaces between the rods; thus, to use an analogy, boring shafts or well-holes, and thereby offering entrance to the multiplying</p>
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bacterial cells, which, following the courses marked out by their own acid excretions, thus, themselves, grow from the surface internally, penetrating the enamel as rapidly as the dissolution of the cement substance permits. Secondly, the excreted acid attacks the cement substance of the rods themselves, separating them into their original components, the globular bodies.

This sums up Dr. Williams's deductions. A brief statement of the evidence may be of interest. Pictures were thrown upon the screen which showed the following conditions: First, a section of enamel, perfect in structure, having a complete imposed layer of micro-organisms. Second, a specimen showing the first encroachment of the acid excretions; the extremities of enamel rods shown separated, the penetration of the acid extending deeper, but not yet having greatly dissolved the cement substance. Surmounting all, a complete layer of micro-organisms. Third, deeper penetration of the acid, reaching through the enamel as far as the dentine; the enamel rods separated to a greater depth, but never so far as the penetration of the acid; the micro-organisms completely covering the surface and in places seen to be entering the shafts formed by the acid dissolution of the cement substance. Fourth, shafts formed completely through the enamel, and the dissolution progressing across the rods, cutting them into globular bodies; a distinct cavity of decay, at every part covered by the layer of micro-organisms, while in the decay itself freed globular bodies which have been detached by the action of the acid.

Could anything be more convincing? Those who have claimed that caries is an acid dissolution find some comfort in these deductions, for they are shown to have been in error only as to the source of the dissolving acid. Those who have clung to the theory of micro-organisms may congratulate themselves upon their astuteness, although they have never so clearly explained the origin and progress of caries as has Dr. Williams. However, all lovers of truth will be gratified that this tremendous problem has been so satisfactorily solved, and we may turn at once to another and equally important aspect of the subject.

**Practical Value
of the
New Knowledge.**

In this issue appears an article by Dr. Burchard which should be read by all of those (few in number) who have urged the publishers not to allow the editor to make this magazine "too scientific," stating that what will be most popular is material which is "practical." Dr. Williams has auspiciously opened the year eighteen hundred and

ninety-seven with the most scientific paper of recent years. Let us question its practical bearing upon our profession.

None who were present and saw his lantern views, none who will carefully read his paper and study his pictures when published, will fail to recognize one fact of tremendous practical value: a fact which, fully appreciated, would revolutionize the practice of all those who belittle science, to the incalculable benefit of their patients.

It was disclosed by the slides that the penetration of the acid solvent is greatly in advance of the actual inroad of caries. Also that a very deep penetration of the acid is apparent before the surface of the enamel would show any evidences of decay deep enough to be discoverable by the ordinary methods of dental examination. Moreover, that the penetration of the acid solvent reaches and affects the dentine itself, while there are yet but microscopical evidences of caries at the enamel surface. The practical deductions from these proven facts are: first, that no actual caries at the surface, which is apparent to the eye, or detected by examination with pointed explorers, is insignificant enough to be left untreated. If caries can be discerned in the mouth, treatment or filling is invariably indicated. Second, the recurrence of caries in teeth hitherto considered well filled by men of experience and skill, it is now seen may not depend upon a new attack of caries from without, but most probably is but a continuation of the original decay, because of the fact that the mere mechanical removal of the visibly destroyed tooth substance, still left behind infected dentine; dentine which under the microscope would probably show not only the action of the acid solvent, but the actual presence of micro-organisms within the shafts thus chemically produced.

From this it follows, as a necessary corollary, that in future the scientific dentist must discover some effectual germicide with which to treat dentine prior to placing a filling, and if such a medicament cannot be found which shall be operative within a few minutes, then the true practice must entail the placing of a germicidal agent in the cavity, to be sealed in for a length of time sufficient to sterilize the dentine, before a filling is inserted. Finally, and joyously be it announced, we have at last effectual argument with which to answer those who leave a stratum of carious dentine in cavities, and prate about revitalization and restoration to normal health of that which is now proven to be chemically dead and possessing within itself no power of renewal.

The Editor's Corner.

Well ! Did you think we were lost? I mean the editor, and I, and the ITEMS OF INTEREST. Truth to tell we are pretty late, but then, there are reasons; reasons which I

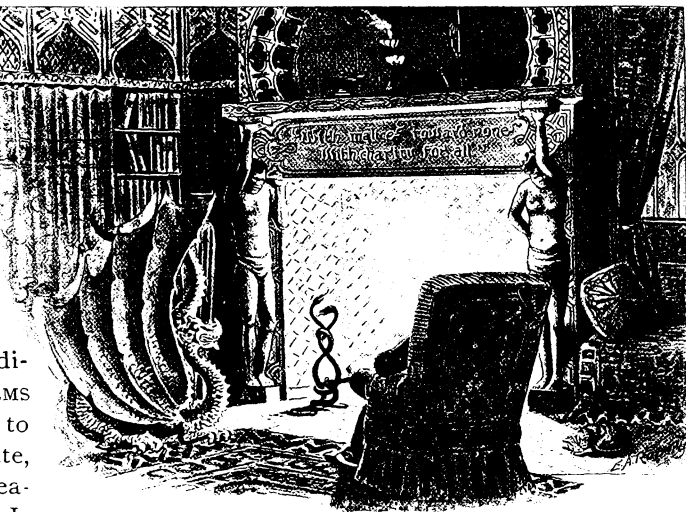
know the editor himself would not disclose, but that is where his Alter Ego will always find his opportunity. Therefore I will explain our tardiness in a very few words; only, consider it confidential, and do not tell the editor that I told you. It has been a veritable chapter of accidents.

The Alter Ego Explains.

In the first place the editor's assistant resigned. Just as the assistant had been trained to the point of usefulness, too. But these little things will happen, only it took three weeks to find another.

The second chapter outranks the first. We have had put into our composing room two type-setting machines. They do not cost very much. Only three thousand dollars each. This caused more delay, and the editor was just the happiest man in the Metropolis. But his joy fairly bubbled over when all the type-setters, the men who set the advertisements, just quietly went on a strike. This lost another week.

The third chapter is the most joyous of all. Just as the editor was settling down to his regular work, as it were, he reached his office one evening to find it empty. I might almost say he was practically turned out of "the editor's corner." You see, the publishers of this magazine, a year ago thought that they had rather commodious quarters but their business has grown so fast, that they found themselves storing goods in the back yard, and even on the roof. So they took a larger building, and without warning they moved the editor's effects into the new place, before his *sanctum sanctorum* was completed. Consequently he is working amidst the tuneful sounds of hammer and saw, and though he says nothing above his breath, I, his Alter Ego, who know his innermost thoughts, do solemnly declare, that said thoughts are not suitable for publication. And this is why we are late.



**Incidents
of Office
Practice.**

In many of our dental societies, the "order of business" includes what has come to be known as "Incidents of Office Practice." These incidents are usually very interesting because most often they are uncommon in some characteristic, and frequently they are exceedingly instructive, including descriptions of unique types of disease, accompanied by a successful mode of treatment. In devoting a special department of the journal to this class of matter, it is with the hope that our readers will forward to us histories of unique cases which have occurred or which may come up in their experiences.

**Office
and
Laboratory.**

Here it would seem we have found an unexploited field and one in which there appears to be the promise of much that will repay the work of cultivation. Who has not visited a brother's office, to note with admiration some special feature, some labor-saving device, some scheme of decoration, something which is worthy of being copied, and which he is glad to have seen?

Why then should not a dental journal make it possible for its readers to view the offices of men in distant cities? It is an experiment worthy of a trial, which can be continued or abandoned as may seem best in the future.

Dr. Kells has certainly given us all some pretty pictures and a breezy description of his offices. If you, my fraternal dental reader, think that your offices contain some special feature, some advantageous scheme of arrangement, something beautiful or out of the common, have a first-class photographer take two or three views, and send the photographs and a description of whatever it is that you consider to be worthy of record, and thus invite us all to visit you, through the pages of *ITEMS OF INTEREST*.

**Intermittent
Regulating
Appliances.**

In the department of Orthodontia in this issue, several of the contributors recommend the retraction of the anterior teeth, by use of a mouth-piece and the head-cap, in connection with which they advise a device for retaining the teeth during the day, while active work is pursued only during the night. This is evidently the result of the many objections made by parents and patients to the headgear, which they consider unsightly during school hours, and is an ingenious, and in some cases might prove a satisfactory, means of compromise.

But upon general principles it would seem to be an unwise effort to overcome an unreasonable objection. A child's health and personal appearance through life should outweigh any obligations of school during a brief period

of childhood, such as would be required to regulate the teeth. So much for the objection to the head-gear. In regard to the retaining appliance, with its ingenious arrangement of bands, bow and nuts, let us analyze the working of such an apparatus. In the first place it is doubtful that some appreciable gain is made during *each* night. Consequently the tightening of the nuts *every* morning is apt to be rather in the nature of a *retracting* than a mere *retaining*. This would be reprehensible, because the only excuse for ever resorting to the head-gear should lie in the fact that the posterior teeth do not themselves offer sufficient resistance for retracting the anterior teeth, with an inside apparatus. Thus there would be danger that while seemingly only using the appliance for retention, force enough might be produced to draw the molars forward. But even granting that the operation of the nuts could be so skillfully managed as to cause no undue tension in this manner, it would still seem to be a faulty method. The molars must be the dependence as a resistance when the *final* retainer is placed. They should therefore not be required to retain the teeth during their movement, when the slowly yielding bones offer more resistance than they do after they have become softened, or resorbed sufficiently to permit the backward movement of the teeth.

**Teeth
Regulated
Automatically.**

At the union meeting held at Rochester in October, during one of the discussions, a member brought up the subject of the removal of teeth, in order to "make room in the arch, and to relieve crowding." This is one of the fallacies, which, barnacle-like, have attached to the practice of our profession, and which cling with a tenacity which is remarkable.

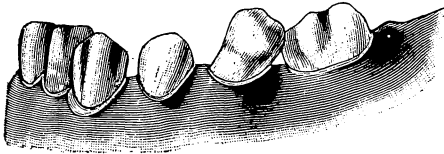
"Doctor," says the little girl's mother, "see how crooked my child's lower teeth are. Can you do anything?" "Let me see," says the dentist, "she is eight years old, is she not? Time enough. Don't bother your head about those teeth yet awhile. Don't let any dentist persuade you to have him regulate them. He would only be advising you for the sake of making a fee. Nature will take care of this mouth, most likely, and, if not, why there is time enough to interfere later on, when we know that interference is absolutely necessary." This sounds so disingenuous, so unselfish, that the parent goes away, gratified to believe that she has placed her child in such conscientious hands.

So the little one goes twice a year for fillings, and she grows taller, and her dresses longer, and her own appreciation of her position increases, until at last, at twelve or thirteen, of her own volition she speaks to her dentist. "Doctor," says she; "what about my crooked lower teeth?" The doctor awakens from his five years' sleep with a start, examines the mouth to find the lower arch filled with teeth of the second set, whilst the incisors are as jumbled

as they ever were. Regulation now would mean a great deal of work. The occlusion with the upper arch is perfect, and widening the lower arch, to make room for properly placing the incisors in line, would break up the "bite," but, more than all, it would be necessary to call the parents' attention to the fact that this delayed regulation was through his mistaken advice; he would possibly shatter the confidence which they have reposed in him. So he looks wise, and commits another sin in order to conceal his error.

"Ah! Yes, to be sure! We must do something. You see now how wise I was to have you wait. It is evident now that all your second teeth are in place, that your teeth are too large for your jaw. You have mamma's delicate jaw and papa's grinders. Ha! ha! We must relieve you of some of papa's grinders! They are too big for such a delicate little lady. Let me see! Ah! Yes! We will take out these ugly old, abscessed molars. That will give the teeth more room, and they will fall back into line nicely. All those crowded teeth *will take care of themselves!*

Then he extracts two molars, which, as the child has been in his care since she was eight years of age, never should have been abscessed, and thus he



kills two birds at one stone; or, I might change the old saw, and say three birds; for not only does he, in the first place, cover up his mistake as to the necessity of regulating, but, secondly, he removes his failures by extracting the teeth which he could not or did not cure; while, in the third place, he renders it impossible for any other dentist to properly regulate those crowded teeth, which he tells the little lady "*will take care of themselves!*"

The accompanying illustration is from a cast made a few years ago. The patient was a lady who now has married daughters, whose teeth were regulated at the proper age, and by a skilled specialist. Her own experience, which was identical with the imaginary case mentioned above, had taught her the futility of waiting for crooked teeth to be regulated automatically. She had suffered the loss of a molar on one side of the lower jaw, with the avowed intent that the crowding in the incisive region should be relieved. The illustration shows the condition *twenty years after the loss of the molar*. The forces of mastication have driven the bicuspid backward, tipping one almost into a recumbent position, while the canine has not budged, and the crowded incisors are not only still crowded, but, because of this fact, have all been extensively filled with gold on their approximal surfaces. There is no greater fallacy than

the theory that "*teeth will straighten themselves.*" Not only will they not straighten themselves, but by their own crookedness they frequently compel an improper posing of the erupting teeth in the opposing jaw, for it is almost an incontrovertible law that erupting teeth will seek and find an occlusion. In the posterior parts of the jaw the teeth occlude with teeth; while anteriorly, as in cases of protrusion, the lower teeth will develop until they abut against the gum tissue of the upper jaw.

**The Evils
of Dental
Incompetency.**

There is another phase of this subject which should have serious consideration in the minds of those who may be desirous of doing their whole duty to their patients. In medicine, practice has been subdivided into specialties, and the general practitioner does not hesitate to refer a patient to a specialist for special treatment. He does this in the interest of his patient, satisfied that he can rely upon the integrity of his brother practitioner, and that his own property rights in the patient will not be depreciated through such reference. Unfortunately, we have not reached that high plane of professional honor, however loudly we may shout about ethics when in conventions, which enables the majority of us to feel assured that if patients be referred to specialists, the specialists will protect the dentists referring. But, however doubtful we may feel on this subject, if really incompetent to serve the patient as she should be served, it is not only selfish to keep control of the case, but it is actually reprehensible, and often results in permanent and irreparable injury to those who repose confidence in us.

**Evils
Which Have
Occurred.**

Pertinent to this aspect of the subject I may allude to several instances which have come to my knowledge within a year. In a case in the practice of a friend, a report of which will shortly appear in the department of Orthodontia, the patient consulted a dentist who was highly recommended, and he advised the extraction of both upper sixth-year molars from a protruding jaw, and then, *after extracting the teeth referred her to a dentist in her own city.* If the case was to be treated by another man, why did he not refer the patient to him, *before* extraction, and permit him to decide which teeth, if any, should be extracted? As it was, he made it necessary to adopt a method which prolonged the time of treatment by several months, and the final result was by no means as satisfactory as that which would have resulted from the removal of the first bicuspid. In another instance this same gentleman has advised the parents of a child who has a superior protrusion to await the appearance of the secondary canines. The child is now fifteen, the canines are still unerrupted, and the dentist is still waiting. On what? Heaven alone can

tell, but we know without telling that the time when that mouth can be made right is rapidly fading away.

But as this dentist I am told intends "some day" to take up the case himself, there is some excuse for him, which is difficult to find in the instance of another dentist, who, intending to refer his patient, also having a protrusion, to a well-known specialist, allowed her to wait three years for the appearance of the canines, so that, when she did go, it was necessary to sacrifice teeth which might have been retained had the case been undertaken at the age of ten, when first presented to his care.

In yet another instance, a certain, widely-known dentist, not a specialist, undertook the regulation of a set of teeth in a girl of fourteen, continued his efforts for three years unremittingly, and then claimed that he had accomplished all that could be hoped for. At the age of seventeen she reached the hands of a skilled man, who accomplished in six months, beginning at the advanced age of seventeen, what the general practitioner had failed to do in three years, though he had the case when the jaw bones were less resistant.

In another instance, a general practitioner treated a deformity for two years, collected a fee of fifteen hundred dollars, and, when completed, only eight teeth in the mouth were in occlusion, while the superior anterior protrusion was so great that the lips could not be made to hide the incisors. This case was absolutely corrected in two months by a man of skill and experience. In yet another instance, and in some respects the most reprehensible known to me, a specialist had just agreed to undertake a unique and rarely difficult case, agreeing to do the best in his power, but declining to "guarantee" the result, when another dentist, a general practitioner, stepped in and offered to take the case, *for half the fee of the specialist and "guarantee" the result.*

At last reports, the case had been in his hands for a year, and up to date he had removed seven teeth, from a mouth, from which another dentist, with erroneous judgment, had already previously removed three teeth. Thus the child has now lost a total of ten teeth, in order to have "her teeth straightened." This sort of guaranteed result reminds one of the story of an irritable old man who was annoyed by the fact that his dog, of whom he was fond, was everlastingly wagging his tail. A certain shrewd veterinary, agreed for a fee in advance, to cure the dog of this habit. The fee was paid, and the doctor cut off the dog's tail.

When the general practitioner lacks the knowledge, the skill, the time, or the inclination, to regulate a difficult case, he should refer it to the specialist. If the specialist should find any fillings or other dental work requisite in the mouth, he should send the child back to her original dentist for such treatment. Thus the ethical amenities would be subserved, and the patient would receive the benefit of the best care.

**The Ethics of
Professional
Advertising.**

Here is a communication from one of the Southern States, signed "Inquirer," which has a vein of humor in its composition. Before quoting it, however, let me say here, and finally, that in future letters from "A Subscriber," "A Constant Reader," "Inquirer," "A Graduate," "A Student," and in fact the whole tribe of anonymous writers, will usually be consigned to the waste basket. If you are desirous of receiving information, have the courage to sign your name. But this letter is really too good to throw away. Here it is un-edited.

"Dear sir—please state through your magazine what you think of a dentist who has a negro walk around the streets with a board on his breast and back and holding an umbrella advertising rubber plates at six dollars and a local anæsthetic do you call that professional advertising or not Inquirer."

The query seems rather an easy one. As it is usually considered unprofessional to advertise at all, the method of advertising is entirely aside from the question. This particular advertising must be counted unprofessional, regardless of the negro, the boards, the wording, or the price of the plates. There is a point of interest in "Inquirer's" inquiry. When he asks "do you call that professional advertising?" it would seem that, in his own mind, there is some form of advertising which is professional. If this meets his eye, another communication from him, throwing light on this, is respectfully solicited. He might also explain why the negro carries the umbrella. Does it rain there continually, or is he shielding himself from the sun or from missiles shied at him from roof tops? And why does the advertising dentist exact a local anæsthetic from his patrons, in addition to the six dollars charged? Does he use the anæsthetic upon himself, that he may benumb his conscience and collect his tremendous bills without pain?

**The Text Book
of Prosthetic
Dentistry.**

The American Text Book of Prosthetic Dentistry being one of the most important dental publications of modern times, tending as it does to elevate the standard of the more mechanical side of our profession, it seemed appropriate that considerable space should be granted to its review. But as I had myself contributed one of the chapters, it was but natural that I should prefer not to undertake any personal criticisms upon the work. The critique, a second quota of which appears in this issue, is from the pen of one of our best writers, himself an expert dentist. This explanation is given, because of a letter received from Prof. Essig, which is herewith cheerfully published, and which is self explanatory. I am also glad to be able to assure Prof. Essig that no intentionally harsh criticism or misrepresentation was intended by the reviewer, who fully appreci-

ates the tremendous labor entailed by the editorship and authorship of such a work.

"I notice in the review of the 'American Text Book of Prosthetic Dentistry,' current number of ITEMS OF INTEREST, the following paragraph:

"In speaking of the manipulation of rubber, prior to vulcanization, he has omitted mention of the newer methods of packing rubber so as to avoid any surplus, or the possibility of air between the layers of rubber. In this chapter he details an expedient for people who are so sensitive as to object to substitution of porcelain teeth for their own, even on artificial plates. Their natural teeth having been extracted, he describes a very interesting method of attaching the crowns of the natural teeth, to the artificial plates. The query might perhaps be made: 'Why should these teeth have been extracted?'

"If you will turn to page 516 of the Text Book, you will observe that I preface the description of the method of resetting natural teeth, as follows: 'In constructing partial dentures for cases when the natural organs are prematurely lost, it is much the better practice to reset the natural teeth, provided, as is often the case, they are of denser structure and have not previously been attacked by caries.' Does this not suggest Pyorrhœa Alveolaris?

"A foot note occurs on page 516, which directs the reader to 'Methods of resetting natural teeth,' page 429, where this same practice is recommended for natural teeth, which are becoming progressively looser. Does not that suggest our old acquaintance, which Burchard calls the *bête noir* of dentistry? I have written to you about this matter because that part of the very excellent and flattering review erroneously conveys the impression that the editor favored the extraction of sound teeth, whereas the method only anticipates the dropping out of progressively loosening organs."

CHAS. J. ESSIG.

Here is a letter signed by Dr. J. C. Littler, who asserts that the incidents occurred as related:

**The
Humorous
Side.**

A lady called at my office to see about having a lower set of teeth made, having had her upper teeth made in the East. I asked her what she had to pay for the upper set, and she said: "Fifteen dollars." "Well," says I, "that was a pretty good price these hard times, but I presume that included the price for extracting?" "No," says she, "they didn't give me any extract. I took gas."

Another lady called during the campaign, to ascertain the probable cost of filling some teeth for her daughter. "I want you to do it just as cheap as you can," said she, "for these are awful hard times." "Well," says I, "as they are all back teeth and none of the fillings will show, I will fill them with silver," and I gave her a price. "You can't fill them with silver now can you?" says she. "Why not?" says I. "Why," says she, with a look of surprise, "I thought silver was demonetized."



Crowning a Fractured Root

BY BURTON L. THORPE, D.D.S., Billings, Mo.

A young lady called at my office recently, presenting for examination the root of the right superior lateral incisor, the crown of which had just been broken off at the margin of the gum by "the kick of a shot-gun." The posterior third of the root was broken loose an eighth of an inch under the process.

After anæsthetizing and removing the live pulp and loose slab, I stopped the hemorrhage and made undercuts to hold a filling, where slab had been removed.

The pulp canal was enlarged and a round silver wire inserted. After applying a 10% solution of cocaine to the gum, a thin German silver matrix was forced under the gum and quick setting alloy burnished into the cavity, contouring root to its normal condition. After removing matrix and pin the patient was dismissed until the following appointment, when a Logan crown was set with prospects of good results.

Crowning Deciduous Teeth.

By JOHN V. COLE, D.D.S., Maryville, Mont.

Dr. Poulson's article in your January number reminds me that when my son was four years of age he accidentally fractured his temporary right central incisor, from which I had previously removed the pulp, subsequently filling the canal and two cavities. I decided to attempt to crown the root, which still seemed firm in its socket. I removed the root filling, slightly enlarged the canal, and fitted a platinum post. Next I burnished thin platinum over the end of root and soldered it to the post. Replacing this I took an impression and bite, and proceeded in the usual manner, using the thinnest of Ash & Son's facings, and grinding to shape and proper size. Even with so thin a tooth I found that the crown would be too thick, and was obliged to grind it

to suitable appearance after soldering, the Ash body permitting this, as it can be polished after grinding. I set the crown with pink gutta percha. It looked well and remained in place for five years, the permanent teeth erupting tardily. The root becoming loosened by the approaching permanent central, I extracted it, fracturing the porcelain, but not disturbing the relation between the post and the root. The end of the root had been absorbed so that the gutta percha appeared protruding.

My little daughter met with a similar accident at four years of age, and I fitted for her a crown in similar manner, except that I tipped the cutting edge with gold. At the present time, two and a-half years later, the permanent tooth is crowding it out, and before long it must be removed.

My children do not fear me or my work, but on the contrary voluntarily jump into the chair and insist upon having their teeth cared for

Misfitting Vulcanite Plates.

By STEWART J. SPENCER, D.D.S., Harriman, Tenn.

I have sometimes remedied misfits in vulcanite plates, by the simple process of warming them until somewhat softened, and then allowing them to cool slowly. This warming may be done over the flame, but better, I think, in hot water. Surrounded by water, the heat is perhaps more equally distributed through the plate than when it is held over the flame.

The theory is, that heat permits the plate to return to its normal shape, the shape given it by the model, if it has lost it.

It was celluloid which gave me this idea. Like many others, I was a victim of the celluloid epidemic of the Eighties. One day, on boiling a celluloid plate to remove the teeth from it, I observed that it relapsed into nearly the original shape, that in which it was furnished at the depot, the "blank." I then tried molding celluloid plates at a higher heat, about 300°, if I remember rightly, and found that these plates would not, when afterwards softened in hot water, return to their "blank" shape, but (if purposely bent for the sake of experiment) would return nearly to the form given them by the plaster cast.

This suggested warming misfitting vulcanite plates to restore them to shape, if warped.

The process, however, fails in those dentures which have a new layer of vulcanite over an older one, as when an old plate has been refitted. I presume that the failure is due to the fact that, when subjected to this process, the older vulcanite draws in the direction given it by the original investment,

and the newer in the direction given it by the later investment, and that these two are opposed to each other. Indeed, I am disposed to believe that this opposition acts on these plates when cooling in the vulcanizer, producing misfits. It may be that this could be prevented by sawing out the entire palatal portion of the older vulcanite.

Erosion from Grape-Acid.

By J. H. MONCRIEF, D.D.S., Greensboro, Ga.

A lady called upon me shortly after the grape season last autumn, complaining of the roughened condition of the labial surfaces of her anterior teeth. Upon inquiry I elicited the fact that she had eaten very freely of Scuppernong grapes. To those who have never tasted this luscious fruit, I should explain that the Scuppernong is a wild grape, common in the forests of our State. The fruit is very large, the skin tough and leathery, but the pulp within is surrounded by an unusual quantity of "grape juice," slightly tart and most alluring.

The enamel of all the incisors were markedly rough, but the central incisors had suffered most. Upon the labial surfaces of these the acid had made deep impression, cutting grooves until the tooth resembled a miniature wash-board, the grooves extending crosswise, and in many places almost passing through the enamel.

I readily made a diagnosis, because I had suffered similarly, though in a lesser degree. My own teeth, after considerable indulgence in grape eating, had become markedly roughened, but as I was warned in time, the roughness was slight and has disappeared. But, of course, in the case of my patient, the grooves are too deep to disappear, and I am in a quandary as to the best method of procedure. Can any one advise me?

Internal Caries.

By J. H. BLAND, D.D.S., Pueblo, Colo.

About six months ago a lady called upon me, suffering intense pain, which she located in the region of the left superior cuspid. I made a thorough examination, but could find no cavity in the cuspid, and as all of her other teeth appeared to be perfectly sound, I diagnosed the pain as of neuralgic origin, and advised a consultation with her physician.

The medical attendant failed to give her any relief, and she returned to me for another examination, which, however, was made without throwing any light upon the mystery. Two months later she again returned, having suffered continuously in the interval, but having at last discovered a rough place upon the suspected cuspid. Upon examination I then detected the most minute cavity at the extreme point of the cutting edge, and upon enlarging was amazed to find the dentine so soft that it could be removed readily with a spoon excavator. I further enlarged the opening, and eventually removed all of the dentine to a line well below the gum margin. A curious factor in the case, which accounts for the continuous pain, was that the pulp had receded as rapidly as the caries had progressed, and was still alive when all decay had been removed. Will someone endeavor to explain this most remarkable case?

(Years ago a similar instance occurred in my own practice. I was using a fine explorer in examining a set of teeth, when the point passed into a minute cavity, in the sulcus of a first superior bicuspid, and to my astonishment, when I endeavored to withdraw the explorer, the entire natural crown came away. Upon examining I found that the dentine had been entirely destroyed, and was readily scooped out, leaving the enamel in the form of a hollow cup, with no trace of dentine adherent. In this instance the pulp had died. This case has always been a mystery to me, but is now readily explainable in the light of Dr. Williams's recent discoveries. It is to be observed that in both cases, when the cavity finally showed, it was upon the masticating surface. Dr. Williams has found many instances of imperfections in enamel, unapparent to the human eye, but quite large enough to permit the passage of the corrosive acids excreted by the micro-organisms which lie upon the surface of the tooth. These microscopic fissures in enamel usually reach the masticating surface. Again, there are not infrequently imperfections within the apparently solid portion of the tooth structure, and one slide recently shown by Dr. Williams disclosed such an internal space, in process of decay, and filled with micro-organisms, yet connected with the surface by a microscopic passage, through which the micro-organisms undoubtedly found admittance.—Editor).





The American Text-Book of Prosthetic Dentistry in Contributions by Eminent Authorities.

Edited by CHARLES J. ESSIG, M.D., D.D.S.

Professor of Mechanical Dentistry and Metallurgy, Department of Dentistry, University of Pennsylvania, Philadelphia. Illustrated with Nine Hundred and Eighty Engravings. Philadelphia and New York : Lea Brothers and Co., Publishers, 1896.

PART II.

Chapters
Contributed by
Dr. C. L. Goddard. For the chapters on the "Principles of Metal Work;" "Cast Dentures of Aluminum and Fusible Alloys," we are indebted to a very popular teacher of the Pacific Coast, C. L. Goddard, A.M., D.D.S. He has handled his subjects with his own characteristic incisiveness, making every word tell something. He gives a wonderfully clear exposition of the detailed working of sheet metal, carrying the student step by step from the ingot to the cut pattern. This is accompanied by some original illustrations of soldering blocks and draw and screw plates.

There is a detailed description of drawing wire, cutting threads, making taps, drills, tubing, nuts, bands, hooks, keys, wrenches, and all the little detailed minutiae which are employed in metal work, and are essential to the technique of a first class metal worker. The larger portion of the chapter is given up to profusely illustrated descriptions of appliances used in Orthodontia.

It is questionable whether he does not too extensively invade the field of operative dentistry in this portion of his work. If it legitimately belongs to this department, it would have been far better to give it a separate chapter with a proper title. He certainly has displayed excellent judgment in the one hundred and forty-four illustrations, selected from the choicest cases of eminent Orthodontia specialists. By no means the least interesting of these appliances are those which are original with the author, and which I believe have their first publication in this volume. They are well worthy of a place beside those of Kingsley, Talbot, Angle, Farrar, Jackson, Coffin, Case and Matteson.

The ten pages devoted to "Cast Dentures of Aluminum Alloys" are altogether too meagre. It will bear revision, and in the next edition should not overlook the casting apparatus devised by Dr. E. H. Casgrain, of Quebec, Can., a detailed and illustrated description of which would be of more value than the entire chapter in its present form.

(To be continued.)

Artificial Anaesthesia: A Manual of Anaesthetic Agents and Their Employment in the Treatment of Disease.

BY LAWRENCE TURNBULL, M.D., Ph.G.

Aural Surgeon to the Jefferson Medical College Hospital, Philadelphia; Late Honorary President to the Otological Subsection of the British Medical Association, and of the Section of Laryngology and Otology of the American Medical Association. Fourth Edition. Revised and Enlarged with Illustrations. Philadelphia: P. Blakiston, Son & Co., Publishers, 1896.

We can not better preface our remarks on the fourth edition of the standard manual of anæsthetics, than by reprinting the most appropriate quotation of the late Professor Samuel D. Gross found on the fly-leaf of Professor Turnbull's work:

"If America had contributed nothing more to the stock of human happiness than anæsthetics, the world would owe her an everlasting debt of gratitude."

This work for some years has very justly been the authority on the three anæsthetics chiefly in general use; nitrous oxide gas, sulphuric ether and chloroform. The merits of nitrous oxide gas are generously set forth and given the first place in the book, in recognition of the discovery of Anæsthesia by Horace Wells through this medium.

The work is of special interest to dentists because of the fact that the author, a prominent medical man, gives to Dr. Wells unequivocal credit as the discoverer of modern Anæsthesia, saying: "We are only now beginning to do justice to his memory."

There is nothing especially new in the treatment of these three anæsthetics. It might perhaps be wise to call attention to the fact that the author speaks in stronger terms than ever of the dangers attending the use of chloroform in comparison with ether. As the use of chloroform in operative

dentistry is constantly more or less advocated, it might be well to give this chapter a very careful perusal.

The main reason for a new edition of this work, is the vast increase in the use of local anæsthetics, especially by means of cataphoresis. While the author has carefully compiled the names of the new local anæsthetics, yet there are many errors, and the book is already behind the current literature respecting cataphoresis. It unfortunately shows a decided lack of care in preparing these additions, which are in notable contrast to the magnificent work on general anæsthetics.

There are some exceptions to this criticism; Cocaine is treated very exhaustively, and full mention is given to the claims of Eucaïne, which claims, however, have not been well substantiated as yet. Schleich's infiltration method is given very careful and detailed description.

Electrical osmoses and cataphoresis is considered almost entirely from a dental standpoint, but unfortunately so many changes have rapidly followed the use of this new means of producing insensibility, that while nothing can be said in criticism of the historical aspect of this chapter, it falls short placing before the reader the latest advances in connection with the subject. The book will, undoubtedly, need another revision to bring this chapter up to date.

In speaking extensively of "Refrigerative Agents," a very considerable attention is given to chloride of ethyl, while he dismisses, with a few lines, the agent which has none of the objectionable characteristics of chloride of ethyl. In fact, the author shows such a lack of knowledge of the properties of chloride of methyl, as to copy verbatim a typographical error, from the New York Medical Journal, where the writer, Dr. Geo. Jacobi, compares its use to condensed carbonic acid gas. Dr. Turnbull has reproduced the original misprint, making it read *carbolic acid*. Its introduction into dentistry by Dr. M. L. Rhein provided the profession with an invaluable means for diagnosing pulpless teeth, but no mention is made of its use in anæsthetizing dentine, or for the relief of tic dolooureux.

The space accorded to the means of resuscitation is also too limited, as he does not include some of the modern mechanical contrivances for forced respiration.

The closing chapter on the legal responsibilities of physicians, in the administration of anæsthetics, is one with which every practitioner would be wise to make himself familiar

In Memoriam.

WILLIAM NEWTON MORRISON, D.D.S.

A special meeting of the St. Louis Dental Society was held on December 22d, 1896. President F. F. Fletcher opened the meeting with the following remarks :

"MEMBERS OF THE ST. LOUIS DENTAL SOCIETY : It was with heavy hearts that your officers sent you notice to meet here in special session this evening. As lightning from a clear sky came the news to us yesterday morning that one of our oldest, most respected and esteemed members lay cold in death.

"A man who but one short week ago sat in his place in the councils of this body and took part in the deliberations, and whom we had every reason to hope and expect would meet with us for years and aid us with his counsel and advice.

"A man known and respected wherever dentistry is practiced. He was a careful student, a ripe scholar and an inventor of much ability.

"Few men in our profession have been more progressive or have lived to see their experimental work in untried fields adopted and approved by all. He was a pioneer in crown work, bridge work, and implantation ; they stand to-day his most lasting monument. But he is gone. The last page of his life is before us.

"My friends, in the death of William N. Morrison the dental world loses one of its pioneers and brightest stars. This society has lost one of its ablest men and most staunch supporters.

"Every member has lost a friend whose place will not easily be filled. May no uncharitable word be spoken, but as we say 'peace to his ashes,' may his memory ever be kept bright by the greatness of his achievements."

Appropriate remarks were made by Drs. H. J. McKellops, G. A. Bowman, J. H. Kennerly, and Wm. Conrad.

The following committee, Drs. H. J. McKellops, John G. Harper and A. H. Fuller, was appointed to prepare a biographical sketch of Dr. Morrison. The committee on January 5th presented this report :

BIOGRAPHICAL.

William Newton Morrison, D.D.S., born in East Springfield, Ohio, May 25th, 1842 ; died in Hot Springs, Ark., December 20th, 1896.

He was one of thirteen children of John R. Morrison. Those surviving are James B., Mrs. Lane of Kansas City, Mo., and Mrs. Cook of Mendota, Ill.

Dr. Morrison's early education was but meager, obtained in the common schools. He worked in his father's sawmill while at home, but left in 1858,

coming to St. Louis to become a student with his brother, James B., the inventor of the Morrison dental engine and chair.

He arrived at his brother's office penniless, having spent his last money to have his boots blackened and his clothes brushed, so as to make a presentable appearance. The brothers kept bachelor's hall in the same building which they occupied as an office.

James B. went to Europe in 1862, and William then took charge of Dr. H. J. McKellops' office, who also left the city about that time.

In 1864 he graduated from the Ohio Dental College.

In 1868 he and Miss Cornelia Holme of Hannibal, Mo., were married. Two sons were added to the family, Peter Holme and William N. The former is married and has a son two years old

The doctor was so successful in his early practice as to be able in 1872 to build at 1401 Washington avenue a house which combines a dwelling and a dental office, each complete for the purpose intended, the plans being made by the doctor and published with illustrations in the *Missouri Dental Journal*.

Dr. Morrison belonged to a family of dentists, having an uncle, two brothers and two cousins who followed that profession

As a dentist Dr. Morrison kept abreast of the profession and was one of the first to use the mallet and to construct gold crowns.

He was one of the first to revive the "planting" of teeth, as he called it, his first cases being reported in 1874, and his last report was made at the last meeting of the St. Louis Dental Society, which he attended on December 1st, 1896

He was fond of visiting the offices of dentists, and when in a town or city made it a rule to call on the members of the profession there located, to learn what he could and cheerfully give to others ideas which he thought might interest or benefit them. He always took pleasure in entertaining dentists of the city or those from abroad.

He became a Mason in 1865. He was reared a Methodist, but after marrying joined the Presbyterian Church, belonging to the Second.

Dr. Morrison was a constant attendant of dental societies and belonged to the American, Southern, Mississippi Valley, Illinois, Missouri and St. Louis, frequently writing papers, giving clinics and joining in the discussions; also holding office in those of which he was an active member, having been President of the Missouri and the St. Louis, twice of the latter. He took an active part in the Missouri Dental College, filling the chair of Mechanical Dentistry; also acted as demonstrator and gave clinics every session when in the city.

Dr. Morrison traveled extensively. July, 1878, he started on a trip around the world, which consumed about a year. While on this trip he learned all he could regarding the status of the profession in the countries visited, bringing home with him specimens of work found while abroad. He also made a large

collection of photographs which he frequently publicly exhibited in aid of charity. In 1890 he took a trip to Germany for his health ; again in 1894, accompanied by his wife, he made a trip to Europe. He has been to the West Indies, and also traveled extensively in this country.

Dr. Morrison was a writer for our journals and many of his articles and items are to be found in the *Missouri Dental Journal* and its successor, the *Archives of Dentistry*, both of which he aided in more ways than one. Of the former he was one of the editors of the Department of Mechanical Dentistry for four years.

Dr. Morrison was a public spirited citizen and did his share for the public good. At his own expense he placed numbers of the street on Washington avenue from Jefferson avenue to King's highway.

Dr. Morrison was as well known and esteemed in this country and abroad, as any dentist in our city. He was the inventor of the Morrison Dental Bracket, being one of the first to put such an article on the market.

Dr. Morrison made friends wherever he went, and no one ever heard him say aught against any one.

His success was gained by hard, faithful work, and he was ever ready to lend a helping hand to his fellowman.

H. J. McKELLOPS,	} Committee.
JOHN G. HARPER,	
A. H. FULLER,	

Correspondence.

**Some
Correspondental
History.**

Dear Doctor Ottolengui : My instant response of the 7th inst. started a train of thought which has gone beyond the line of individual locality into the region of general professional and business interests. That particular starting point was the personal reminiscence included in the

paragraph which, with your consent, I here quote :

"I highly appreciate the compliment of your request for contributory articles, and this affords me an occasion for saying that since Dr. James W. White invited and I accepted professional connection with this company fourteen years ago, I have not in a single instance received any suggestion or intimation relating to my professional, personal or public contributions or conduct, but in every case at all times and in society attendance and meetings I have been as unrestricted in individual action as when in my previous twenty-five years' office practice at Cincinnati. I tell you this not only in justice

to the noble men with whom as officers of this company I have been so long and pleasantly associated, but to confirm you in your considerate conclusion that, notwithstanding the current comments on the supposititious conduct of competitors in a business or profession, the paramount claims of true courtesy and honor will prevail among gentlemen in every reputable avocation. I cordially desire for you untrammelled freedom in all your business, editorial and professional relations."

The common, crass and crude assumption of a class barrier between professional and business employments leads to sophistical entanglements similar to those of current controversies over the fallacious discriminations and incriminations between capital and labor. Clearness of thought and utterance is best subserved by preliminary correct and concise definitions.

Profession versus Business.	Suppose then that we should say that the actual worker or business man has something to sell or exchange on receipt of an equivalent in value, while the theoretical professional man has something to give without receiving any equivalent in value. The fundamental primary factor in both employments is the doing something for another, who, secondarily, either makes some return, or receives the gratuitous service without return. The working professional man, however, does in fact practice his specialty as a business man having something of value to sell, and as a rule his professional prices bear a percentage of relation to the cost of the work in material and time, which, to the ordinary business man, seems astounding. In any case, one does not so much object to the price or "fee," as to the supercilious assumption that the seller is not "in business" for himself, but is in the "practice of a profession" as a public benefactor. Nevertheless, if the personal fee price for service rendered be not paid, it is collectible with costs by law on a business basis.
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Beyond the immediate individual relations of seller and buyer, practitioner and patient, there are general communistic or public concerns wherein business and professional interests and considerations are subject to much misunderstanding, and which have resulted in regulative legal enactments which improperly discriminate the medical and dental practitioner from the business man, who justly views the pretense of public protection as a cover for class legislation. There is the further and wider false claim that to the so-called professions are chiefly due the promotion of the educational, scholastic, eleemosynary and scientific institutions, which are the Christian crowns of civilization the world over. But in point of fact, the organization, support and endowment of the humblest and highest modern seats and sources of learning have been largely, if not mainly, directly due to the princely gifts of public spirited and benevolent business men.

Leaving the general and resuming the particularly dental aspects of the subject, it is eminently fit and proper to make it part of the history of modern

dentistry that in the publication of the *Dental News Letter* and its successor, the *Dental Cosmos*, Dr. Samuel S. White, followed by the S. S. White Dental Mfg. Co., have as highly honorable business men largely contributed to the establishment of the dental profession in this and other civilized countries on an elevated plane of practice based on the principle that the best ware or work at a fair price is the right of the confiding purchaser or patient.

**Management
of the
Dental Cosmos.**

The editorial conduct of the *Dental Cosmos* by Dr. James W. White, subsequently the president of the company, was exceptionally able and impartial from the literary point of view and made the *Cosmos* the foremost cosmic dental journal. All the while he was hampered by aspersions of captious critics who imputed to him a controlling business bias to the detriment of the profession, which had no more staunch upholder and defender of its real honor and true interests, his standards of duty and responsibility being immeasurably higher than the low levels of his detractors. His successor in the chair, Dr. E. C. Kirk, coming fresh from, and continuing in professional practice, was by the company management through its president, Mr. H. M. Lewis, given complete editorial control, specifically and absolutely independently of the business or publishers' interests, and he so continues in unhindered control to this hour. The writer is a competent witness to these statements because of his intimate and confidential relations to the management of the company and the *Cosmos* editorship since the beginning of the year 1883. Mr. F. L. Hise has had a still longer experience in the same direction, and can give corroborative evidence, for in all his reportorial and other literary connections with dental associations and societies, he has never once been instructed to do or say anything in the business interests of the concern or company.

Many dentists in every part of the United States, and many in foreign countries who have a personal acquaintance with Mr. Hise, are aware that though never in dental practice, he has a theoretical knowledge of dentistry not often equalled by front rank practitioners, while he at the same time is well versed in dental business means and methods. He, in fellowship with the writer, is proud of contributory association with the several successive and successful members of the S. S. White Company management who have so nobly made a profession of their business in contra-distinction to the trade journalists and others, who have made a business of their profession, dishonoring both themselves and their employments. The "trade journal" epithet is somewhat like a profane utterance which has been said to "be the strong language of a weak mind."

The foregoing facts completely confute the calumniators and will confirm the good opinions of the thousands of honorable and proficient practitioners everywhere who welcome every sincere effort to promote the progress and

elevate the practical and professional standards of dentistry in all its true phases.

It remains to be said that no officer or member of the company has any present knowledge or intimation of either the fact or nature of this contribution to the history of modern dentistry.

W. STORER HOW, D.D.S.,
Philadelphia, Pa.

**Dr. Hanning's
Sectional
Bridge.**

I wish to comment upon the method of inserting a dental bridge where the respective abutments are not in perfect alignment, as described in a paper by Dr. J. H. Hanning, of Brooklyn, in your January issue.

The principle of the dovetail and its construction is good. I have used it for ten years and have proven its merits. The application of this principle as advocated by Dr. Hanning is bad, and contrary to all true mechanical laws, either in dental or other bridge building. He has placed the weakest part of the span in the middle, a method which if used in a highway or railroad bridge would soon prove fallacious. The bridge would soon be so weak as to be unable to sustain its own weight. The dovetail should be placed at one end of the bridge, or as near one abutment as practicable, thus securing the least possible strain from leverage, and the greatest strength and durability.

SIDNEY S. STOWELL, D.D.S., Pittsfield, Mass.

(In this connection it may be appropriate to express regret that several errors crept into the published account of Dr. Hanning's paper. In the first paragraph, in two places the word "both" should read "teeth," and in next to the last line, "chloroform" should have been "chloro-percha." These errors should not have occurred, but their appearance accentuates the advisability of sending manuscript typewritten.—Editor.)